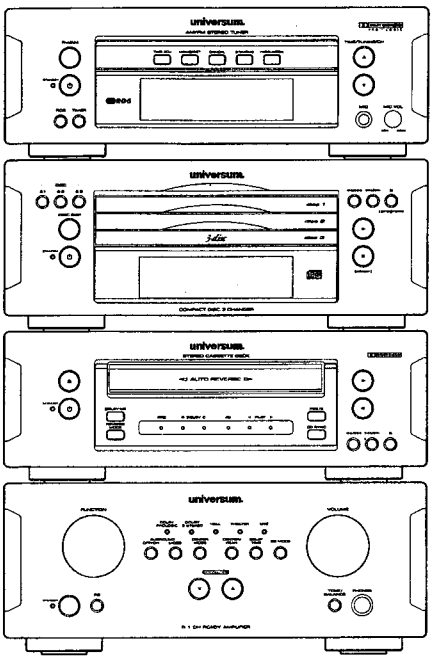
universum.



VTC - CD4005
SERVICE MANUAL

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CAUTION

1. Parts identified the ⚠ symbol on the schematic diagram and the parts list are critical for safety.
   Use only replacement parts that have critical characteristics recommended by the manufacturer.
2. Make leakage-current for resistance measurements to demermind that exposed parts are acceptably insulated from the supply circuit before returning the appliance to the customer.

SPECIFICATIONS

AV MASTER AMPLIFIER section

- **When SURROUND is OFF**

FRONT : 2ch × 60W (8Ω), 0.5% (1KHz)
Input Sensitivity Impedance : AUX : 250mV/20kΩ
Frequency Response : AUX : 20~50KHz (-3dB)
Channel Speration : 60dB
S/N Ratio : AUX (IHF-A) : 85dB

- **When 5.1CH ON**

FRONT : 2ch × 20W (8Ω), 0.5% (1KHz)
CENTER : 1ch × 20W (8Ω), 0.5% (1KHz)
REAR : 2ch × 20W (8Ω), 0.9% (1KHz)
Frequency Response : CENTER : 20~50KHz (-3dB)
REAR : 100~6KHz (-3dB)
S/N Ratio : 65dB(L/R) CENTER : 65dB
REAR : 60dB
Power Consumption : 230W
Power Requirements : AC 230V, 50Hz
Dimensions (W×H×D) : 276 × 115 × 302 mm
Weight : 6.1kg

TUNER Section

- **FM SECTION**

Frequency Range	: 87.5~108MHz
Sensitivity (S/N 30dB)	: 3.0μV (75Ω)
Total Harmonic distortion	: MONO : 0.3%
	STEREO : 0.5%
S/N Ratio	: MONO : 65dB
	STEREO : 60dB

- **AM SECTION**

Frequency Range	: 522~1620KHz
Sensitivity	: 600μV
Total Harmonic distortion	: 2.0%
Dimensions(W×H×D)	: 276 × 102 × 287mm
Weight	: 3.2Kg

CASSETTE DECK Section

Track System	: 4-track, 2-channel stereo
Recording System	AC bias
Erasing System	: AC erasing
Tape Speed	: 4.8cm/sec
Motors	: DC motor
Frequency Response	: Normal : 40~14,000Hz
	CrO_2 : 40~15,000Hz
	Metal : 40~16,000Hz
FF and REW	: 120 sec(C-60 tape)
Wow and Flutter	: 0.25% (JIS, WRMS)

S/N Ratio
Dolby OFF : 55dB (CCIR/ARM)
Dolby B ON : 65dB (CCIR/ARM)
Dolby C ON : 75dB (CCIR/ARM)

Dimensions (W×H×D)	: 276 × 102 × 281mm
Weight	: 3.0Kg

COMPACT DISC PLAYER Section

- **AUDIO**

Channel	: 2 ch
Frequency Response	: 20~20,000Hz ± 2.5dB
S/N Ratio	: 85dB (IHF-A Filter)

- **SIGNAL**

Sampling Frequency	: 44.1KHz
Error Correction Method	: CIRC
Decording D/A	: ΔΣ1 bit Linear

Low Bandwidth Filter : 8 times oversampling digital filter

- **PICK-UP**

Method : Non-contact optical reading

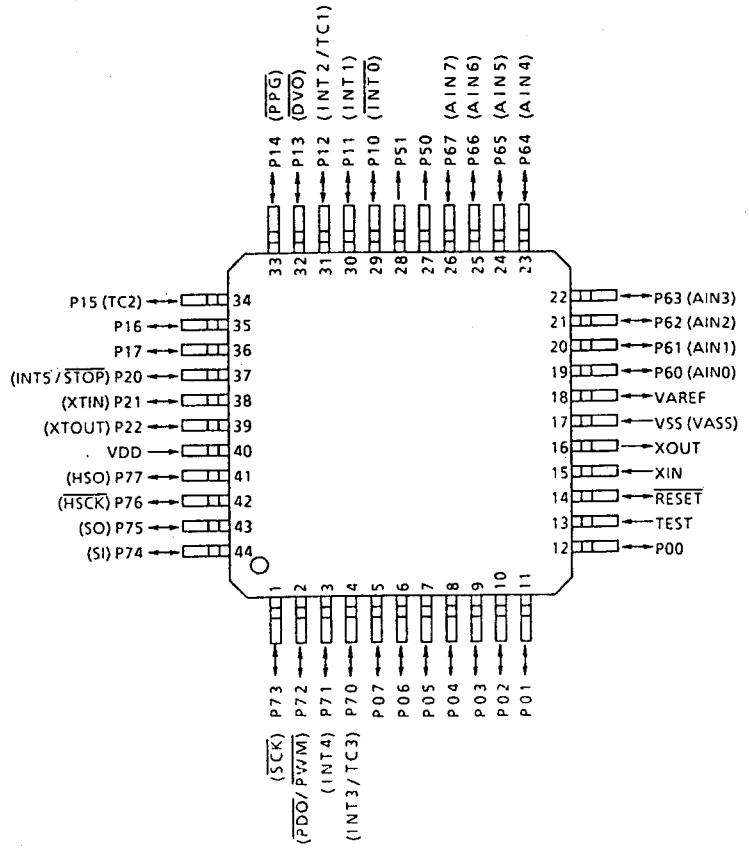
Source of light	: Semiconduct Laser
Wave Length of light	: 780nm
Dimensions(W×H×D)	: 276 × 115 × 281 mm
Weight	: 3.0Kg

IC71 (ANAM1310V)

PIN No.	PIN NAME	I/O	DESCRIPTION
1	Sio clk	I	CLOCK IN/OUT
2			Not use
3,4	HREQ	I	HREQ
5~9	SURR INDICATOR	O	SURR LED ON/OFF
10			Not use
11	H.P IN "L"	I	HEAD PHONE IN "L"
12	A.MUTE	O	FUNCTION MUTE
13,17	VSS		GND
14	RESET	O	u-COM RESET PORT
15,16	XIN / XOUT	I/O	CRYSTAL INPUT/OUTPUT
8	VAREF		REFERENCE VOLT PORT
19,20	FUNCTION	I	FUNCTION UP/DOWN
21,22	VR	I	VR UP/DOWN
23,24			Not use
25,26	KEY	I	KEY METRIX PORT
27,28			Not use
29	REMO IN	I	SENSOR REMOTE INPUT
30	S.MUTE	O	SURR MUTE
31,32			Not use
33	POWER "H"	I	POWER ON/OFF PORT
34	A.RELAY	O	STEREO relay control PORT
35	S.RELAY	O	SURROUND relay control PORT
36	+5.6V		+5.6V
37~39			Not use
40	VDD		VDD
41,42			Not use
43,44	Sio data	I	SYSTEM DATA IN/OUT PORT

PIN ASSIGNMENTS (TOP VIEW)

QFP44-P-1010-0.80



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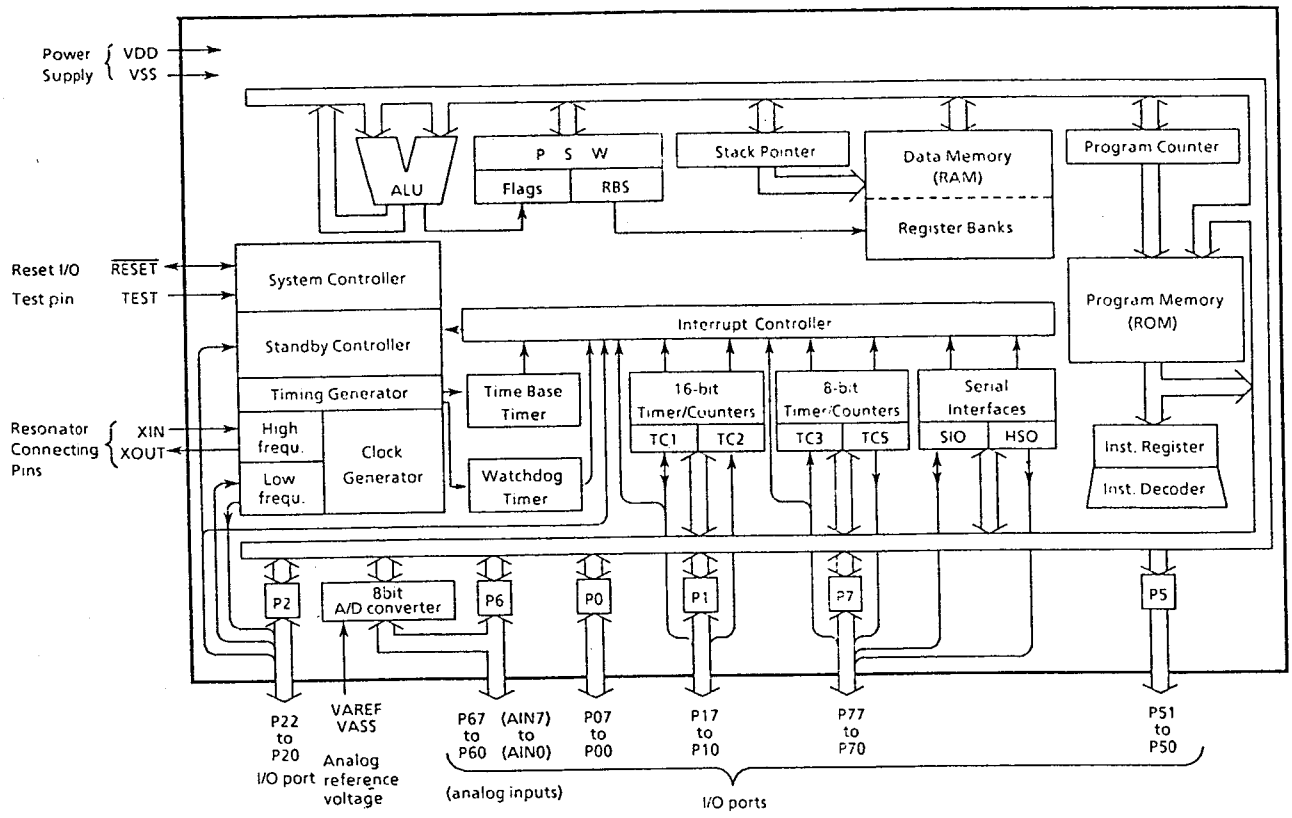

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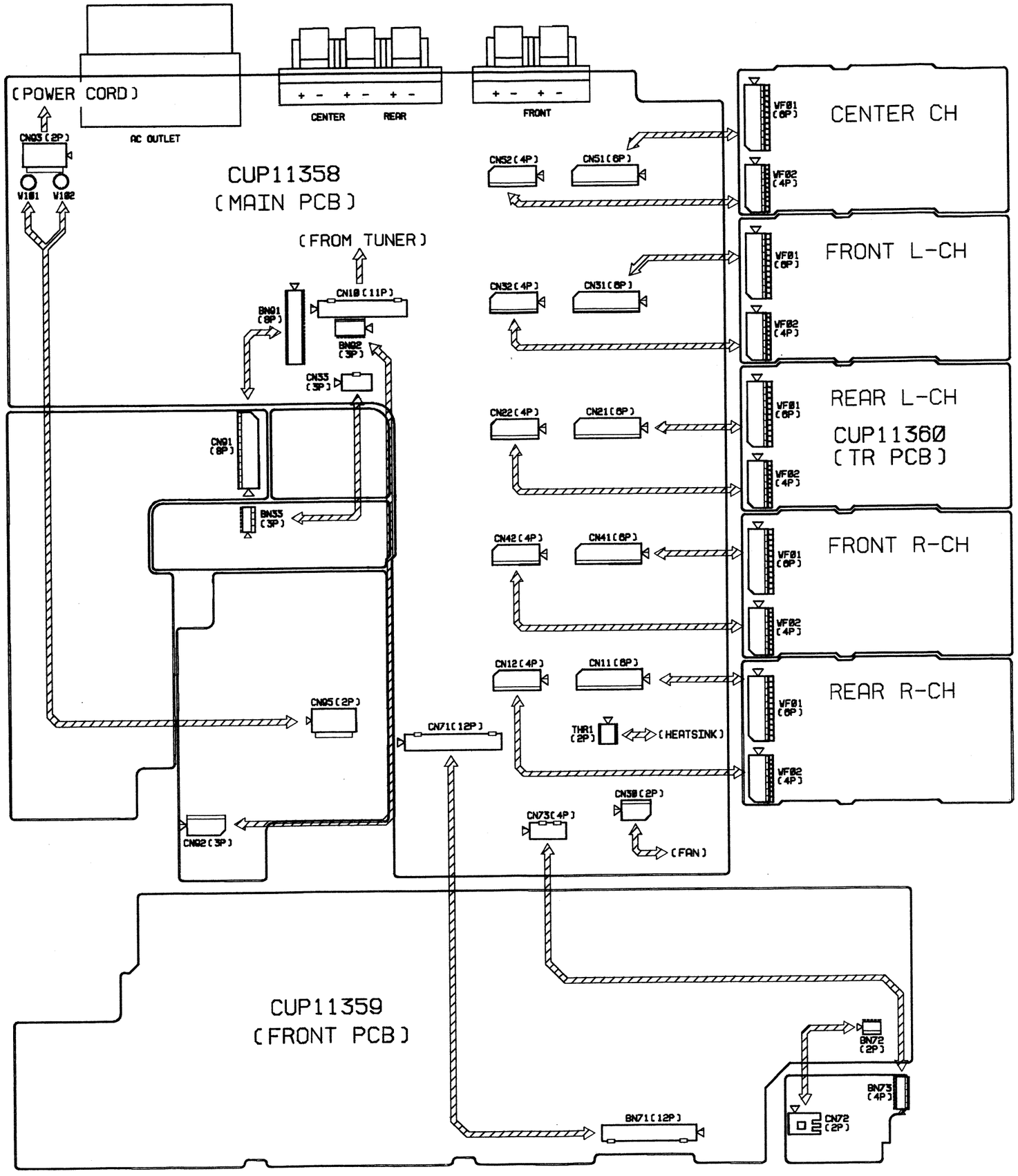

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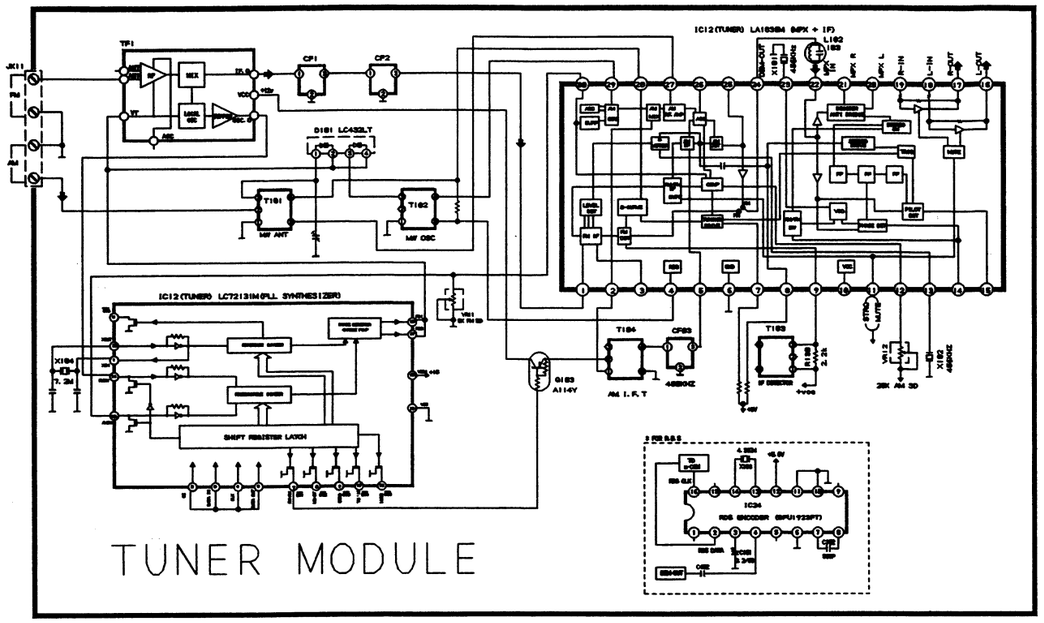
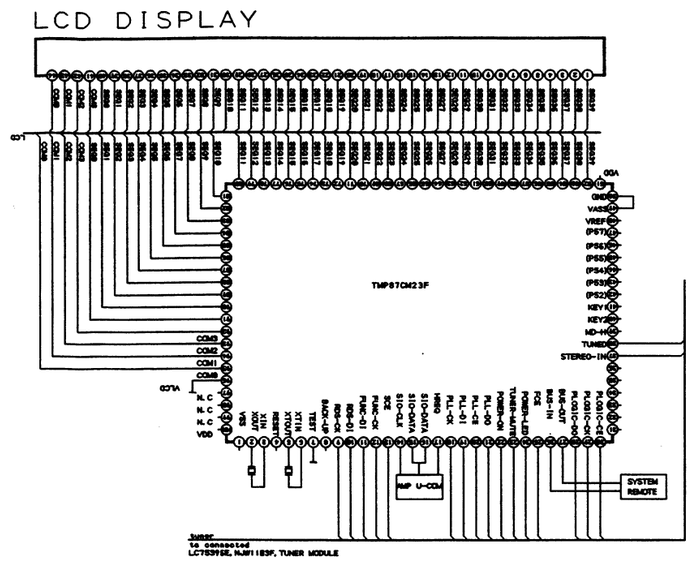
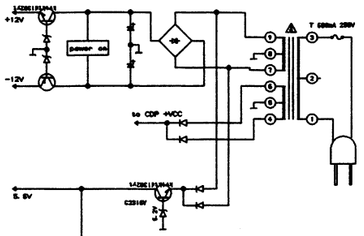
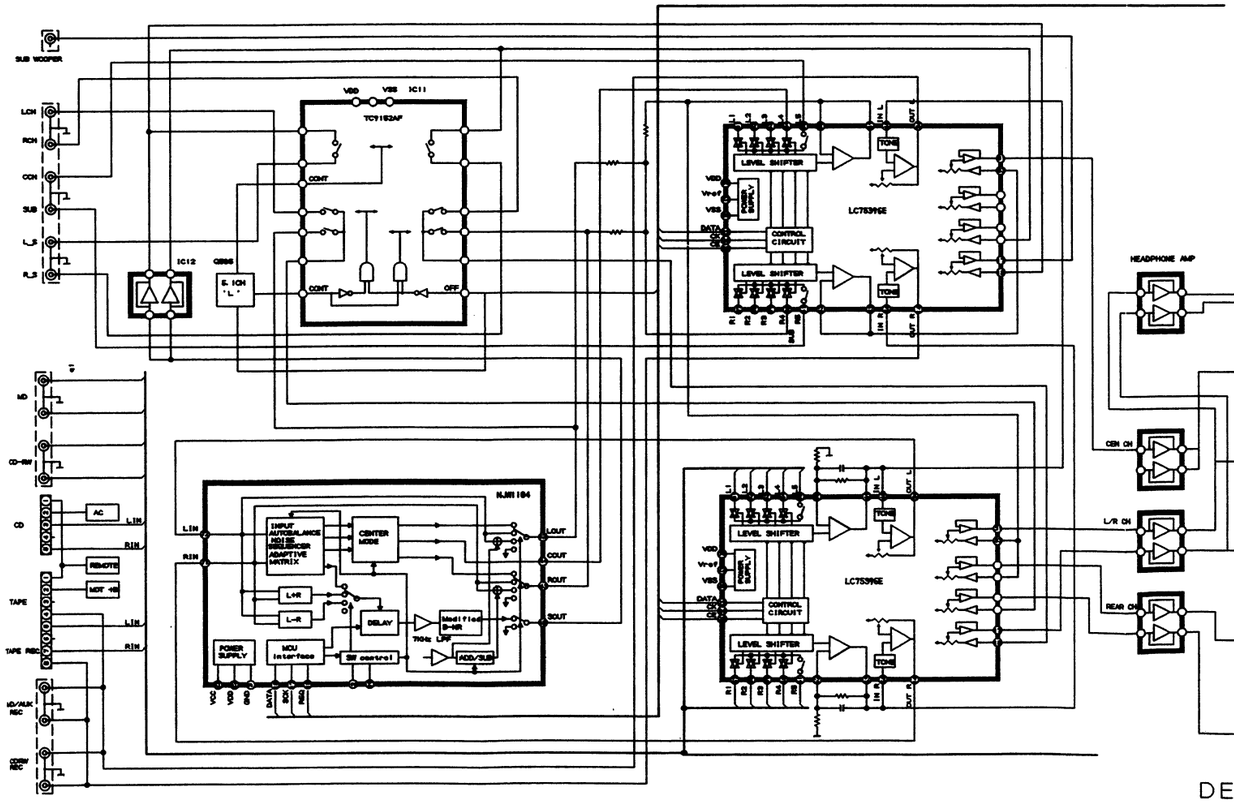
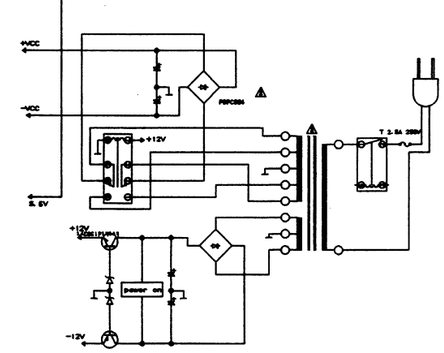
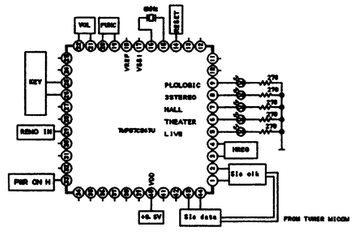




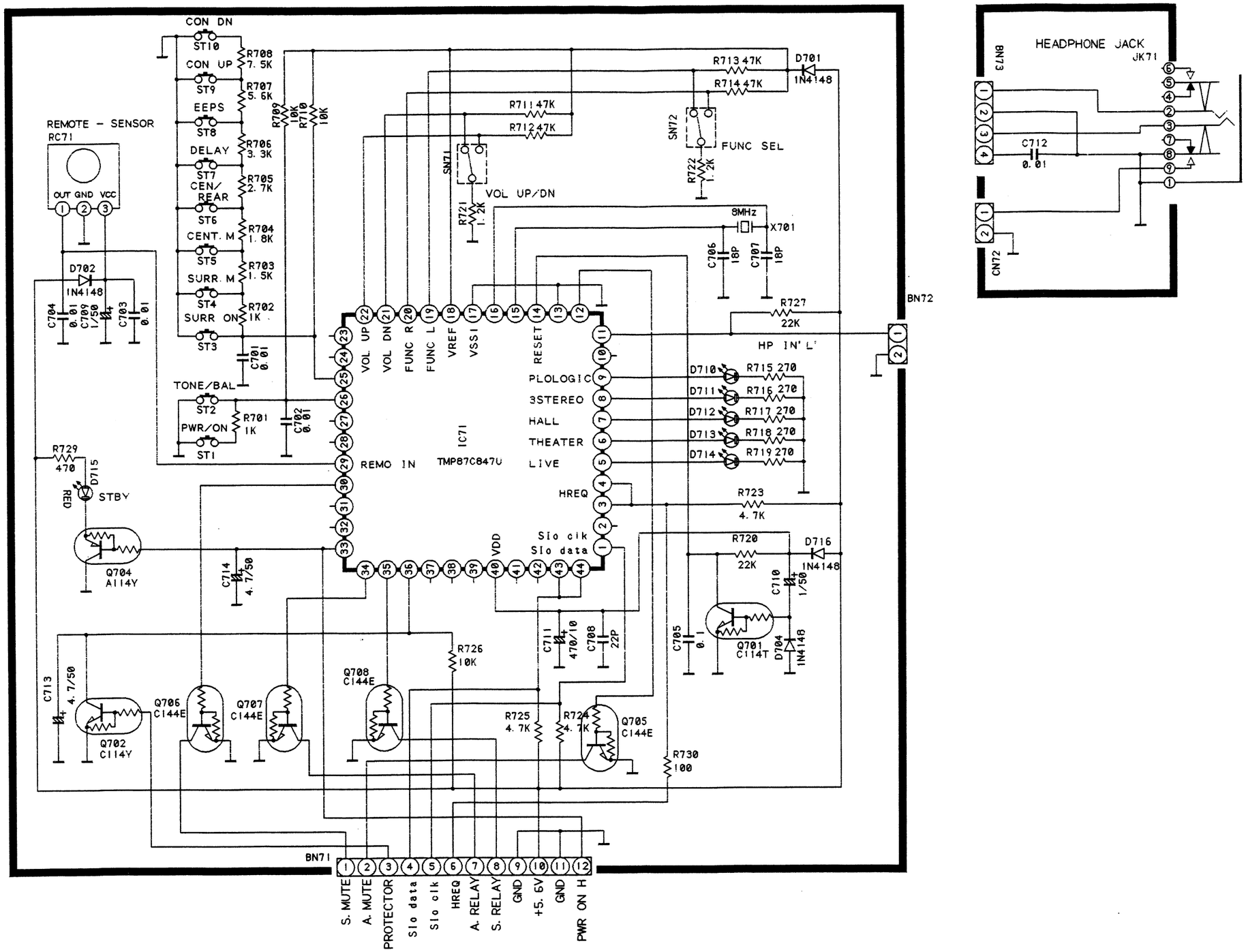




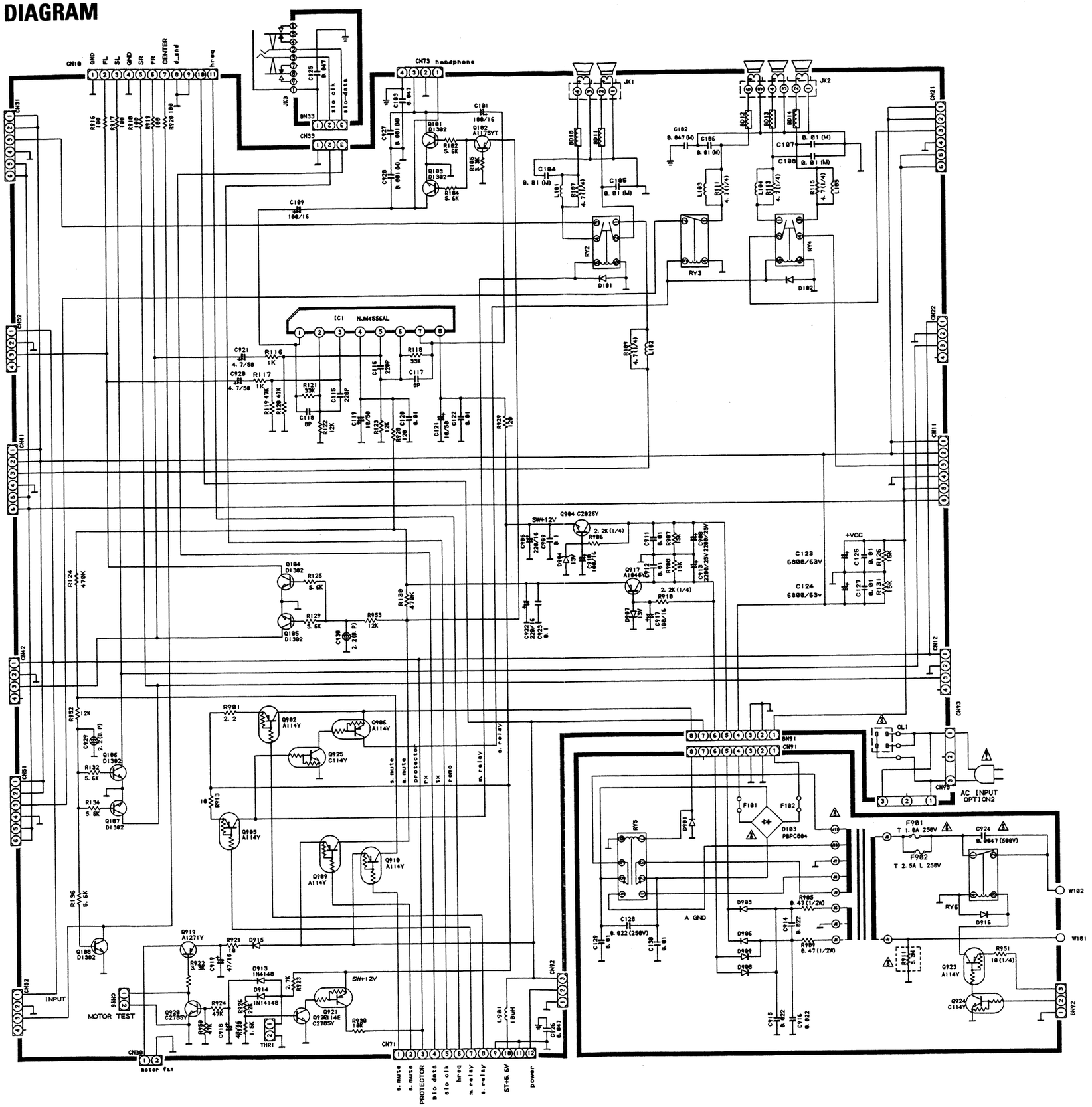




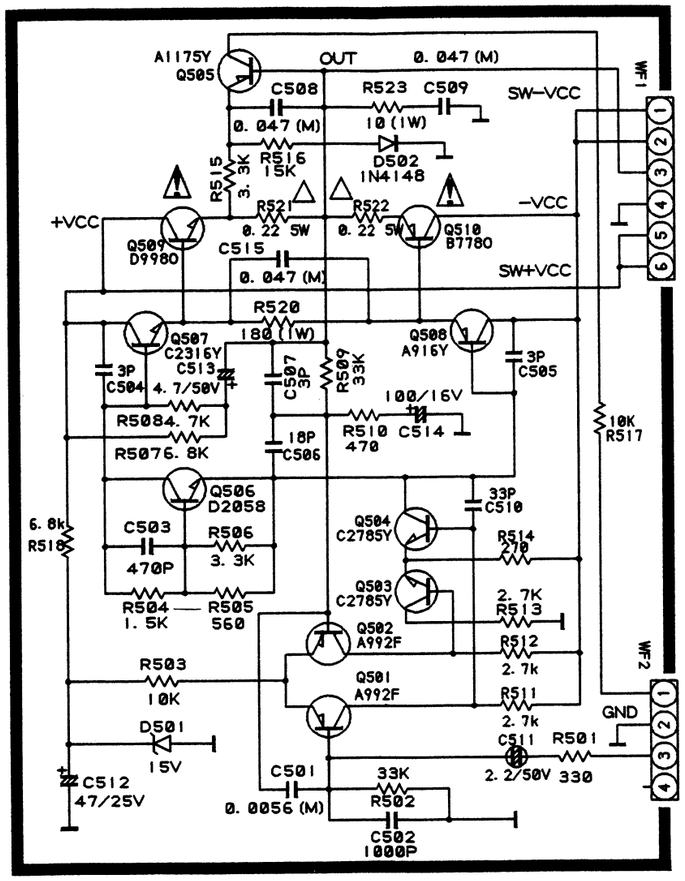
SCHEMATIC DIAGRAM



SCHEMATIC DIAGRAM

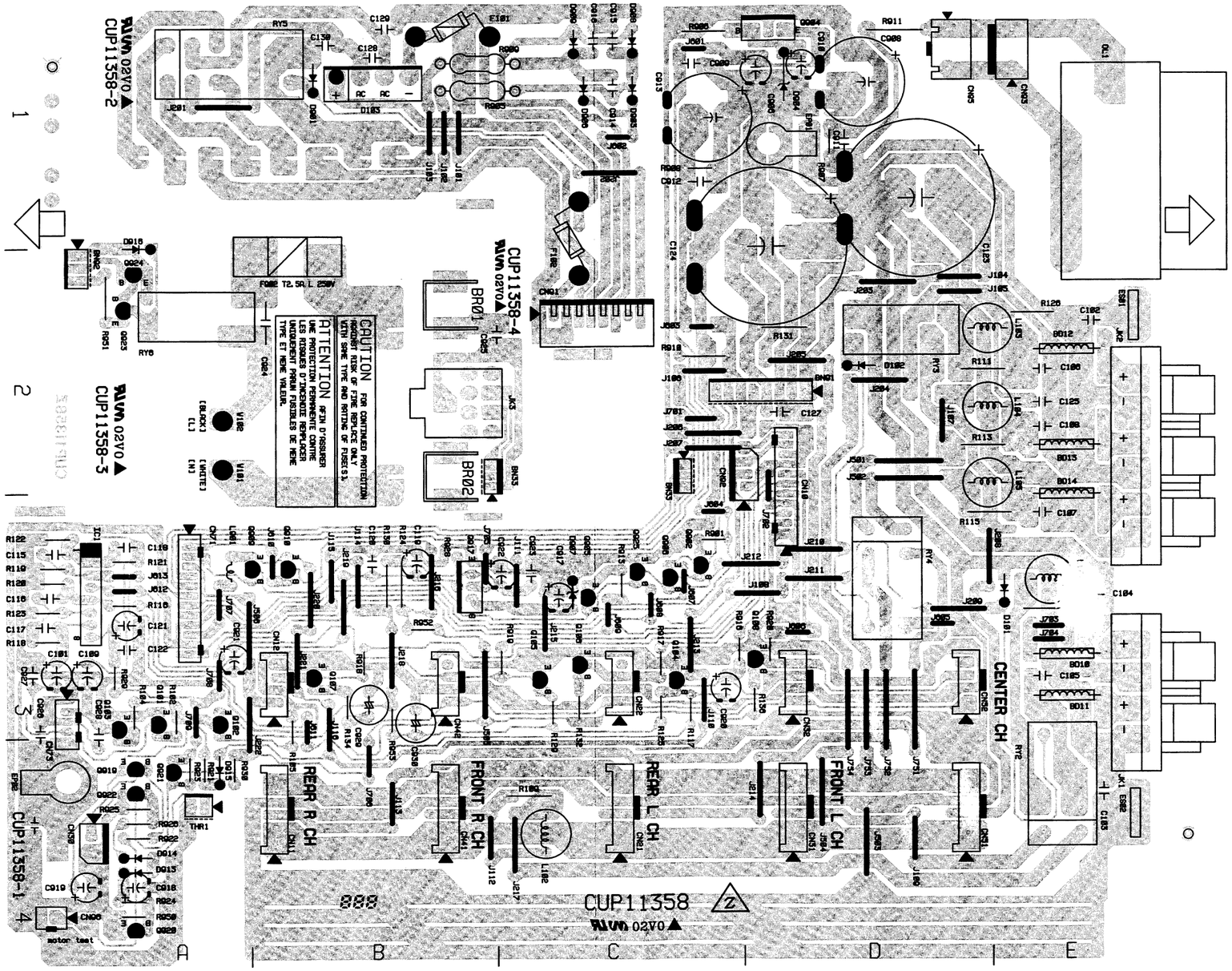


SCHEMATIC DIAGRAM

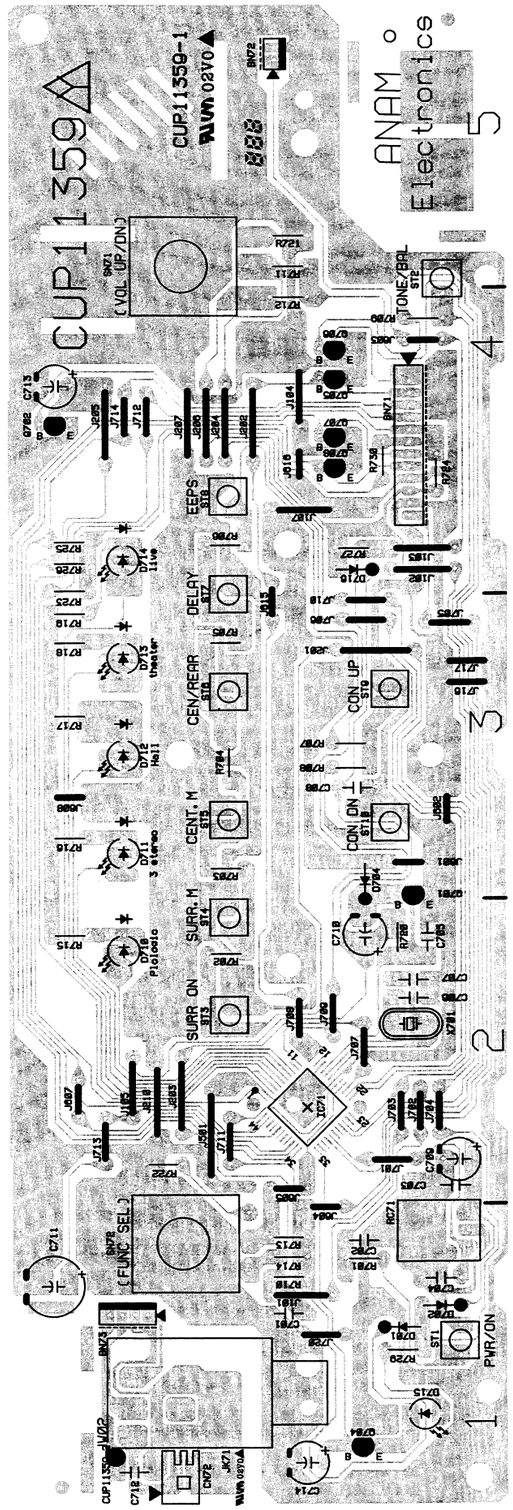


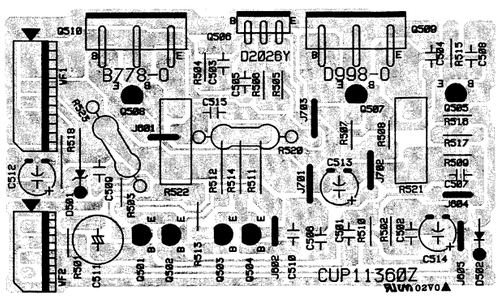
THE AMPLIFIER SECTION SCHEMATIC DIAGRAM USED TO IN ONE BY ONE EACH CHANNEL

PRINTED CIRCUIT BOARDS



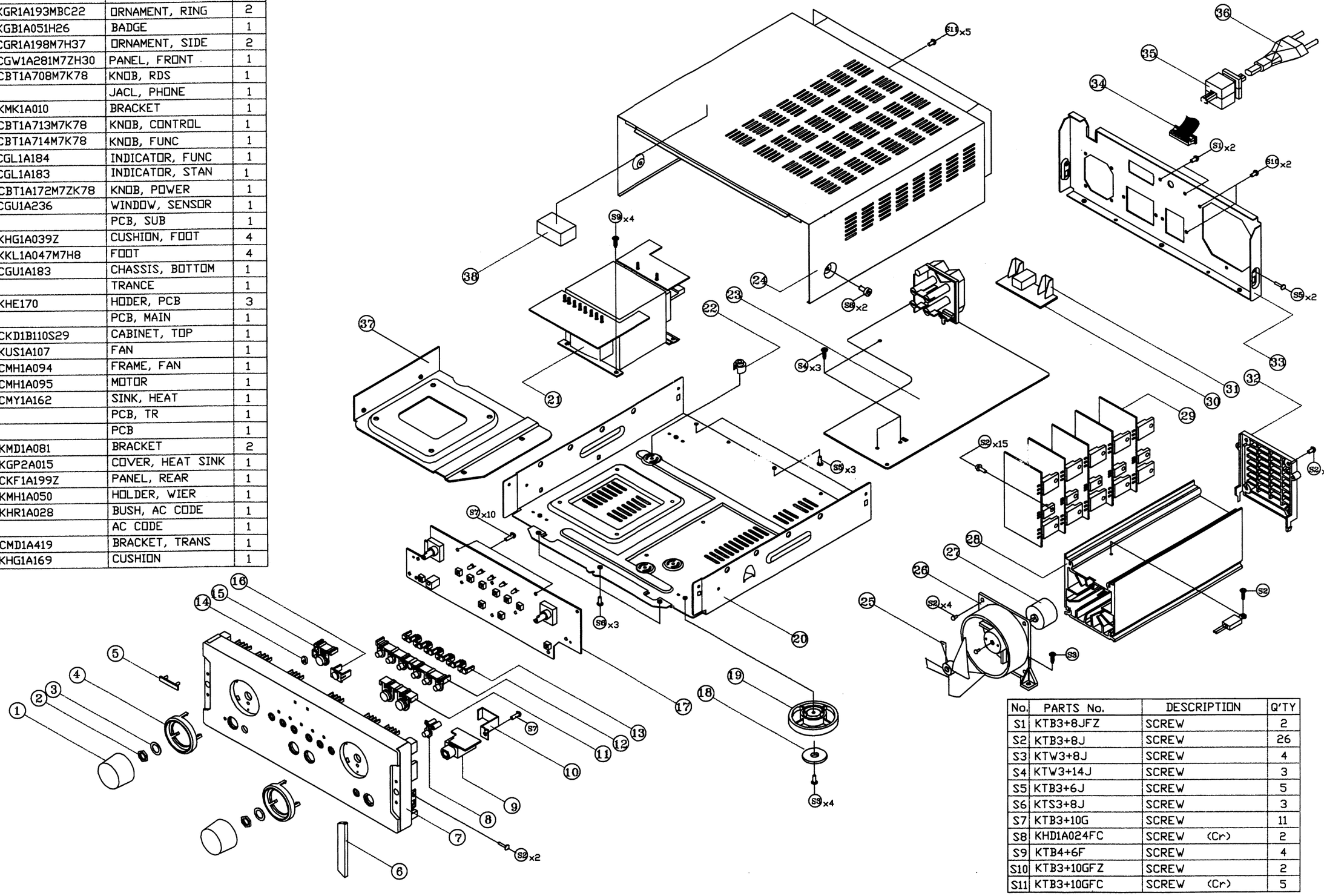
PRINTED CIRCUIT BOARDS





EXPLODED VIEW

No.	PARTS No.	DESCRIPTION	Q'TY
1	CBN1A121M7K78	KNOB, VOULME	2
2		NUT	2
3		WASHA	2
4	KGR1A193MBC22	ORNAMENT, RING	2
5	KGB1A051H26	BADGE	1
6	CGR1A198M7H37	ORNAMENT, SIDE	2
7	CGW1A281M7ZH30	PANEL, FRONT	1
8	CBT1A708M7K78	KNOB, RDS	1
9		JACL, PHONE	1
10	KMK1A010	BRACKET	1
11	CBT1A713M7K78	KNOB, CONTROL	1
12	CBT1A714M7K78	KNOB, FUNC	1
13	CGL1A184	INDICATOR, FUNC	1
14	CGL1A183	INDICATOR, STAN	1
15	CBT1A172M7ZK78	KNOB, POWER	1
16	CGU1A236	WINDOW, SENSOR	1
17		PCB, SUB	1
18	KHG1A039Z	CUSHION, FOOT	4
19	KKL1A047M7H8	FOOT	4
20	CGU1A183	CHASSIS, BOTTOM	1
21		TRANCE	1
22	KHE170	HODER, PCB	3
23		PCB, MAIN	1
24	CKD1B110S29	CABINET, TOP	1
25	KUS1A107	FAN	1
26	CMH1A094	FRAME, FAN	1
27	CMH1A095	MOTOR	1
28	CMY1A162	SINK, HEAT	1
29		PCB, TR	1
30		PCB	1
31	KMD1A081	BRACKET	2
32	KGP2A015	COVER, HEAT SINK	1
33	CKF1A199Z	PANEL, REAR	1
34	KMH1A050	HOLDER, WIER	1
35	KHR1A028	BUSH, AC CODE	1
36		AC CODE	1
37	CMD1A419	BRACKET, TRANS	1
38	KHG1A169	CUSHION	1



No.	PARTS No.	DESCRIPTION	Q'TY
S1	KTB3+8JFZ	SCREW	2
S2	KTB3+8J	SCREW	26
S3	KTW3+8J	SCREW	4
S4	KTW3+14J	SCREW	3
S5	KTB3+6J	SCREW	5
S6	KTS3+8J	SCREW	3
S7	KTB3+10G	SCREW	11
S8	KHD1A024FC	SCREW (Cr)	2
S9	KTB4+6F	SCREW	4
S10	KTB3+10GFZ	SCREW	2
S11	KTB3+10GFC	SCREW (Cr)	5

■ PARTS LIST

ATTENTION

1. **When placing an order for parts, be sure to list the Part No., Model No, and the description of each part. Otherwise, the non-delivery of the part or the delivery of a wrong part may result.**
2. **Please make sure that Part No. is correct when ordering. If not, a part different from the one you ordered may be delivered.**
3. **Since the parts shown in Parts List of Preliminary Service Manual may have been the subject of changes, plaese use this Parts List for all future reference.**

HOW TO USE THIS PARTS LIST

1. This Parts List lists those parts which are considered necessary for repairs. Other common parts, such as resistors and capacitors, are listed in the "Common List Service Parts" from which these parts should be selected and stocked.
2. Parts not shown in the Parts List and "Common List for Service Parts" will not in principle be supplied.
3. How to rear the Parts List.

■ RESISTORS AND CAPACITORS

Notes :
- Part numbers are indicated for most mechanical parts. Please use this part number for parts order.
- IMPORTANT SAFETY NOTICE. Components identified by ⚠ mark have special characteristics important for safety. When replacing any of these components, use only manufacture's specified parts.
- The unit of resistance is OHM(Ω) K=1000(Ω), M=1000(KΩ)
- The unit of capacitance is MICROFARED(μF) P=10 $^{-6}$μF

■ Numbering System of Resistor

Example

CRD	25	F	J	101
Type	Wattage	Shape	Tolerance	Value

Resistor Type	Wattage	Tolerance
CRD: Carbon CRG: Metal Oxide CRF:Metal Cement	20:1/5W 25:1/4W 50:1/2W 1:1W 2:2W 3:3W	F:= ±1% J:= ±5% K:= ±10%

■ Numbering System of Capacitor

Example

HCKR	1H	101	K	B
Type	Voltage	Value	Tolerance	Peculiarity

Capacitor Type	Voltage		Tolerance
	ECEA Type	Other	
HCB:Ceramic HCC:Ceramic HCK:Ceramic HCQI:Polyester HCQP:Polypropylene HCQS:Polystyrol	0J:6.3V 1A:10V 1C:16V 1E:25V 1H:50V 1V:35V	1H:50V DC 1:125V DC KC:400V AC	C: ±0.25pF G: ±2% J: ±5% K: ±10% Z: +80%, -20%

■ ELECTRICAL PARTS LIST

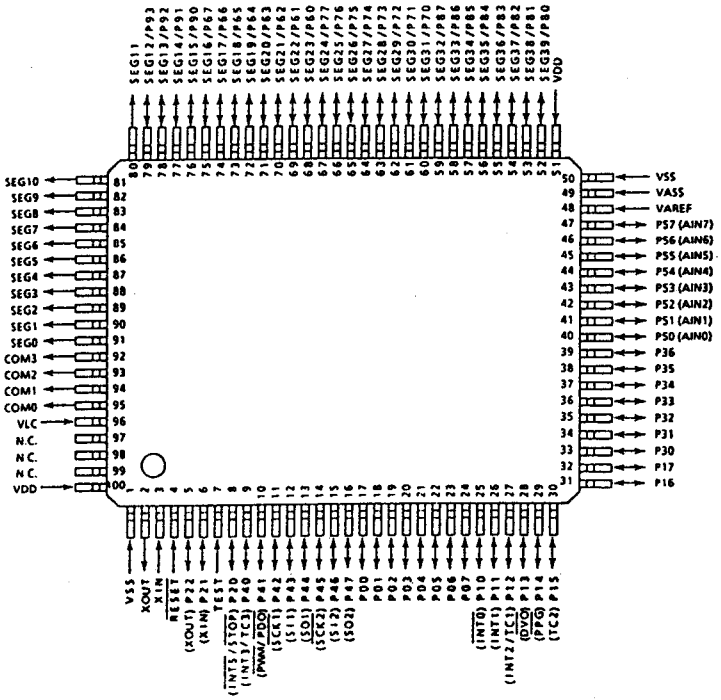
REF. No.	PART No.	DESCRIPTION
	FRONT PCB	
	CUP11359Z	FRONT PCB (AMP)
D710 ~ D715	KVD342MCTB7T089	L.E.D , GREEN
BN71	CWB2B912150EN	WIRE
BN72	CWB2B902080EN	WIRE ASS'Y
BN73	CWB2B904100EN	WIRE ASS'Y
CN72	KJP02GB46ZM	WAFER
IC71	HVIANAM1310AV	U-COM
JK71	HJJ2E017Z	JACK
JW02	CWZAMC660JW52	WIRE ASS'Y
RC71	KRVHIM602H32	SENSOR , REMOCON
SN71 , SN72	HSR2A006Z	VR , ENCODER
X701	KOX08000E160C	CRYSTAL
	MAIN PCB	
	CUP11358Z	MAIN PCB (AMP)
D903 , D906	KVD1N4003SRT	DIODE
D908 , D909	KVD1N4003SRT	DIODE
D904 , D907	HVDMTZJ13BT	DIODE , ZENER
JW42	CWZAV7742	WIRE ASS'Y
BD10 ~ BD14	KLZ9H001Z	BEAD , CORE
BN95	CWB4D632120PU	WIRE ASS'Y
CN11 , CN21	KJP06GA63ZY	WAFER
CN31	KJP06GA63ZY	WAFER
CN41 , CN51	KJP06GA63ZY	WAFER
CN12 , CN22	KJP04GA63ZY	
CN32	KJP04GA63ZY	WAFER
CN42 , CN52	KJP04GA63ZY	WAFER
CN93	KJP02KA060ZY	WAFER
CN95	KJP02GA89ZM	WAFER
C123 , C124	HCET63VFHS682N	ELECT , CAP
C908 , C913	HCEA1EH222E	CAP , ELECT
C924	BCKWKC472MF	CAP , CERAMIC
D103	HVDKBU804F	DIODE , BRIDGE
F101 , F102	KBA2B6000TSU	FUSE , LEAD
IC01	HVINJM4556AL	I.C
JK01	KJJ5P014Z	TERMINAL , SPEAKER
JK02	CJJ5R004Z	TERMINAL , SPEAKER
JK03	HJJ2E024Z	JACK , MINI
L101 ~ L105	CLEYK1R8KA	COIL
OUL1	BJJ7A003Z	OUTLET , AC
Q904	HVTKTC2026Y	T.R , KTC2026Y
Q917	HVTKTA1046Y	T.R , KTA1046Y
RY02 , RY04	CSL4A010ZU	RELAY
RY03	CSL1A008ZE	RELAY
RY05	CSL4A011ZE	RELAY
RY06	CSL1C001ZE	RELAY(1C1P,5V
R905 , R909	KRQ1AJR47H	RES , FUSE
THR1	KRTP42T7D330B	THERMAL SENSOR , POSISTOR
	KWDJ0111000VE	WIRE ASS'Y
	BJP11HB96ZM	A,B CONNECTOR(HOUSHING)
F901	KBA2C2500TLE	FUSE
T901	CLT5U013ZE	TRANS , POWER
	CWZMEGA900W01	WIRE
	KJS9D001Z	CORD(STEREO) MINI
	TR PCB	
	CUP11360Z	T.R PCB (5 OF 10 PCB)
D501	KVDUZ15BMT	DIODE , ZENER(15V
Q501 , Q502	HVTKSA992FT	T.R
Q506	HVTKTC2026Y	T.R , KTC2026Y
Q509	HVTKTD998O	T.R , KTD998O
Q510	HVTKTB778O	T.R , KTB778O
R520	KRG1ANJ181H	RES , METAL OXIDE FILM
R521 , R522	KRF5EKR22	RES , CEMENT
R523	KRG1ANJ100H	RES , METAL OXIDE FILM
WF01 , WF02	KJP06HB60ZY	HOUSING , ANGLE

IC91 (ANAM1309T)

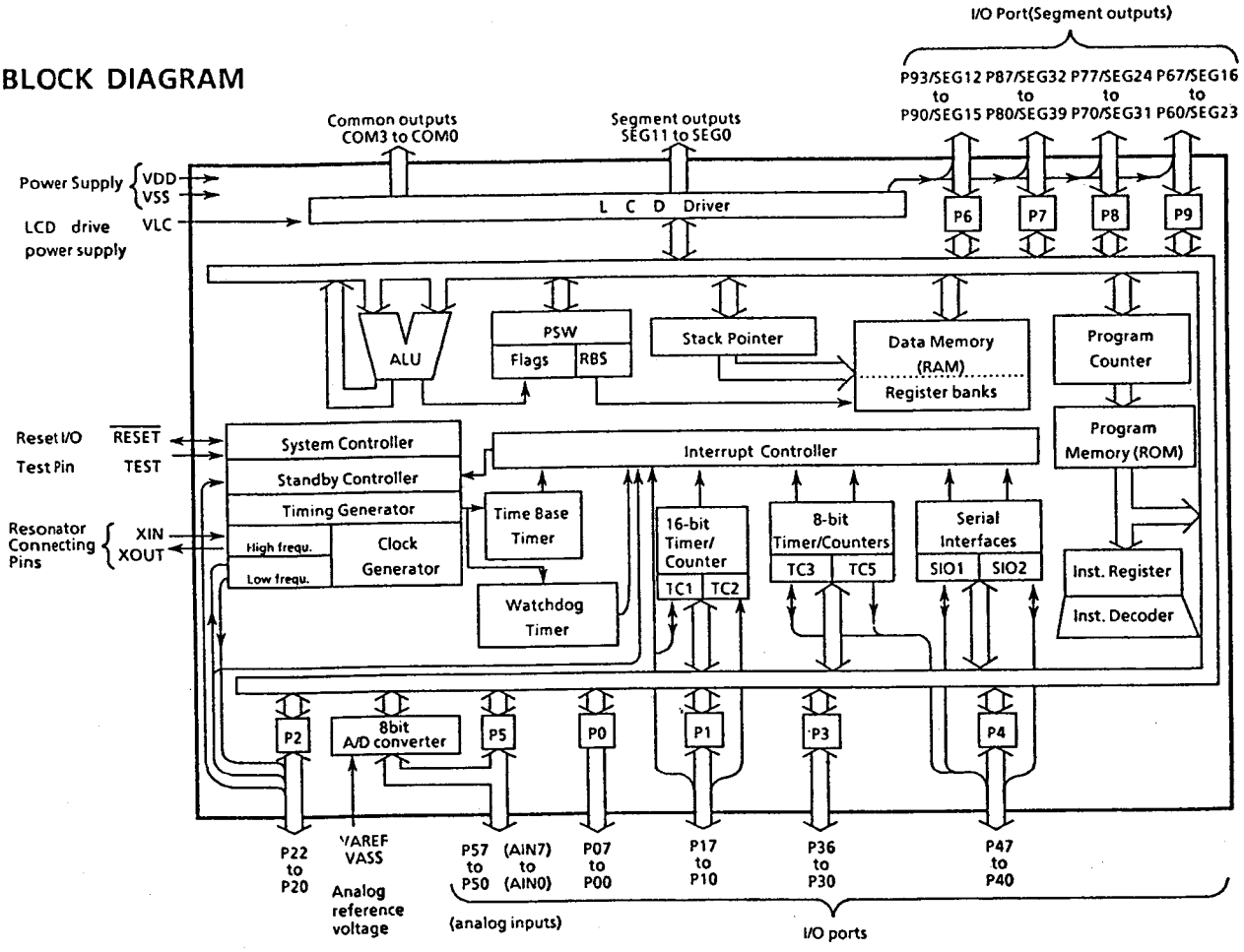
PIN No.	PIN NAME	I/O	DESCRIPTION
1,7	VSS / TEST		GND
2,3	XIN / XOUT	I/O	CRYSTAL (8MHz) IN/OUT
4	$\overline{\text{RESET}}$	O	u-COM RESET PORT
5,6	XIN / XOUT	I/O	CRYSTAL (32.768KHz) IN/OUT
8	BACK - UP	O	BACK-UP PORT
9	RDS - CK	I	RDS CLOCK INPUT
10	RDS - DI	I	RDS DATA INPUT
11	FUNC - CK	I	FUNCTION CLOCK INPUT
12	FUNC - DI	O	FUNCTION DATA INPUT
13	SCE	O	LC 75396E Control chip Enable
14	SIO-CLK	I/O	LC 75396E Clock
15,16	SIO-DATA	I/O	LC75396E DATA
17	HREQ	O	HREQ
18~21	PLL-CK/DI/CE/DO	I/O	PLL CLOCK, DATA IN, CE, DATA OU
22	POWER ON	O	POWER ON/OFF control PORT
23	TUNER-MUTE	O	TUNER-MUTE
24	POWER LED	O	POWER LED ON/OFF
25	FCE	O	IC CONTROL
26,27	BUS IN/OUT	I/O	BUS LINE IN/OUT PORT
28~30	PLOGIC-DO/CK/CE	I/O	PLOGIC-DATA OUT, CLOCK, CE
31	5.1CH"L"	O	5.1 CH "L"
32			Not use
33,34	TAPE-H/AUX-H	O	33-TATE "H" / 34-AUX "H"
35,36			Not use
37	STEREO-IN	I	STEREO - INPUT
38	TUNED	O	TUNED - INPUT
39	MD-H	O	MD "H"
40,41	KEY METRIX	I/O	KEY METRIX
42			Not use
43~47	OPTION	I	OPTION
48	VREF	I	REFERENCE VOLT INPUT
49,50	VASS/GND	I	GND
51,100	VDD	I	VDD, 5V
52~91	LCD SEGMENT	O	LCD SEGMENT DRIVE OUT
92~95	LCD COMMENT	O	LCD COMMENT PORT
96	VLCD	O	GND
97~99			Not use

PIN ASSIGNMENTS (TOP VIEW)

QFP100-P-1420-0.65A



BLOCK DIAGRAM



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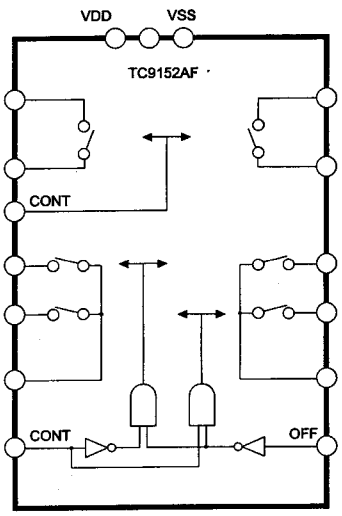
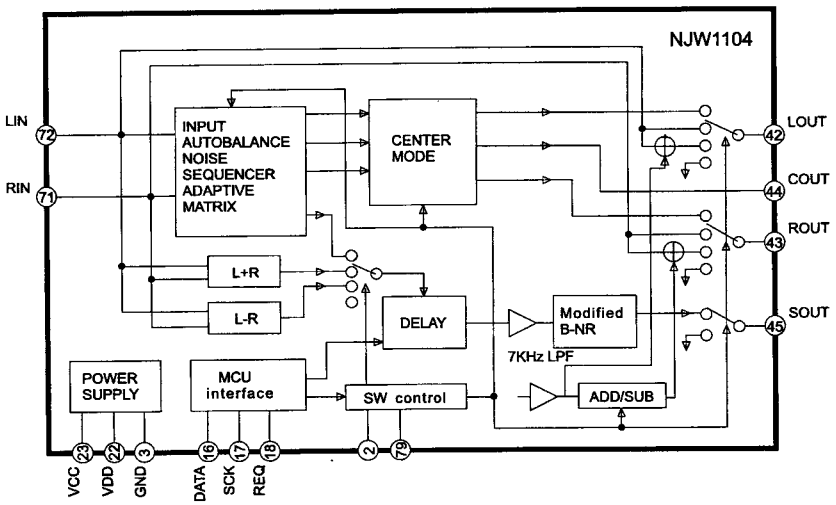
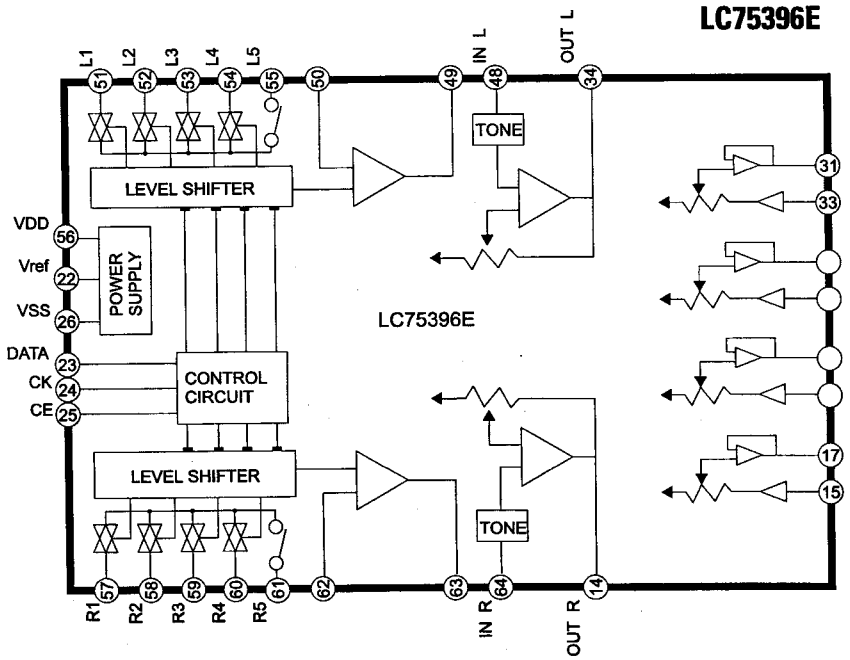


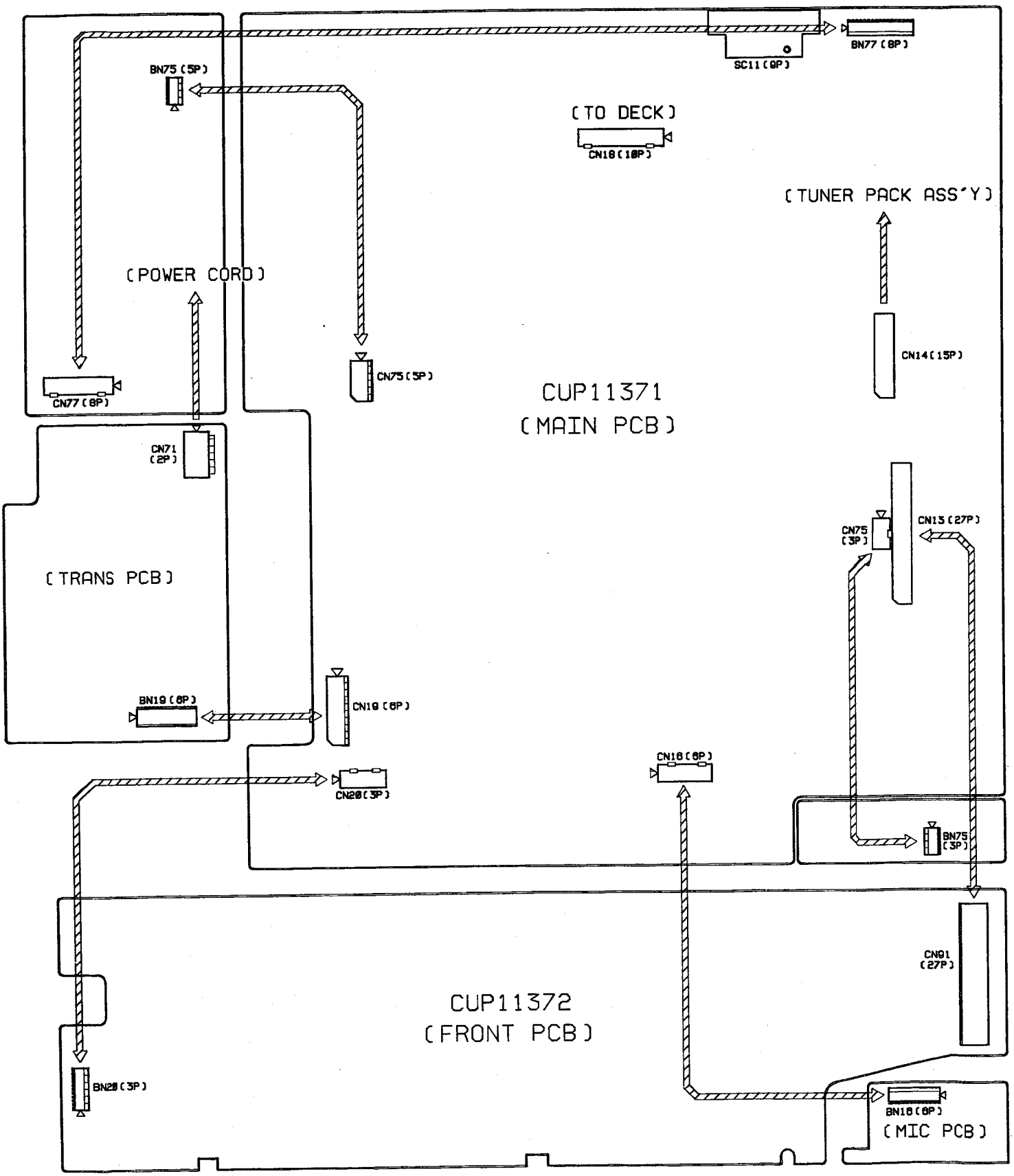
NJW1104F(Dolby Prologic surround DECODE



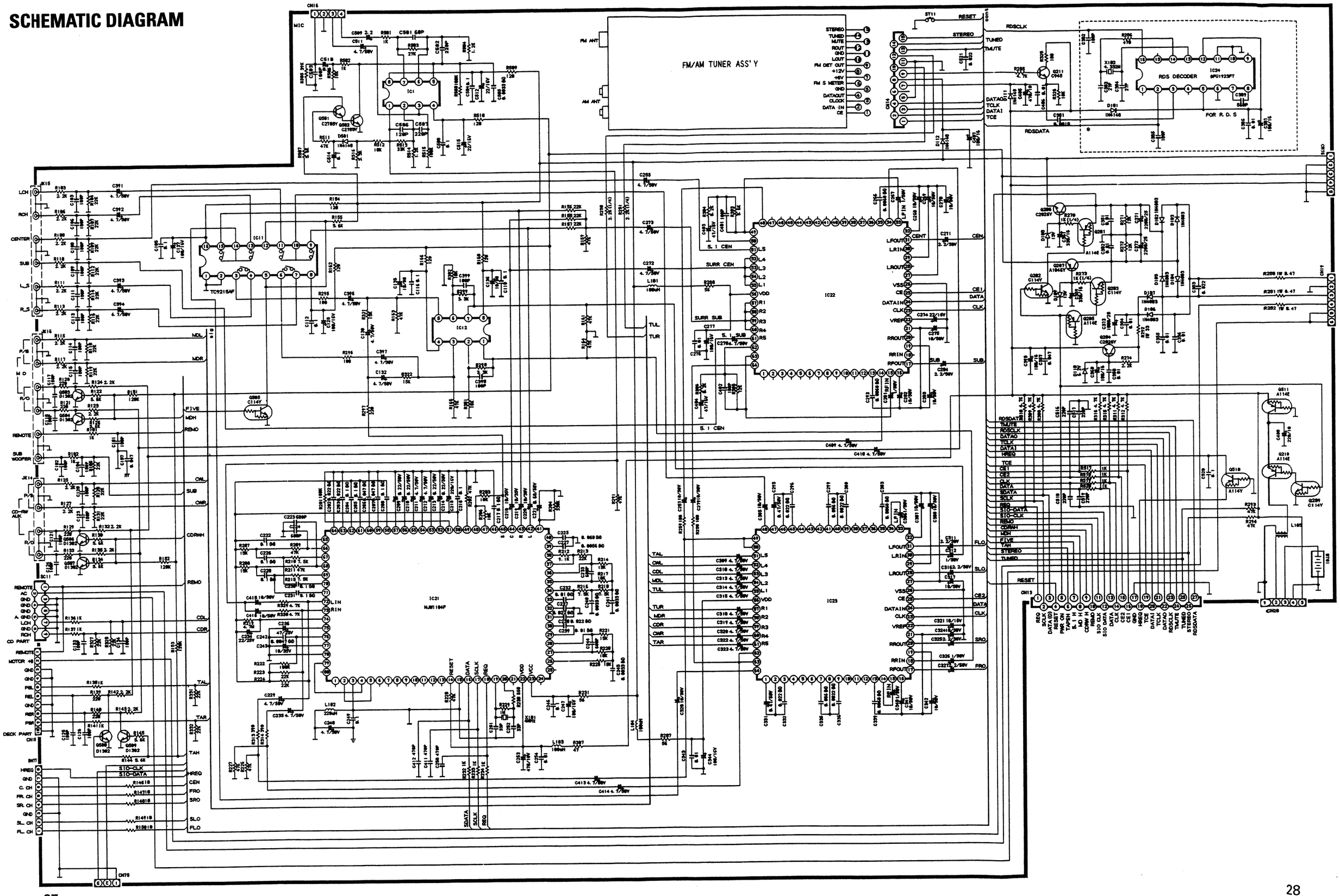
LC75396E



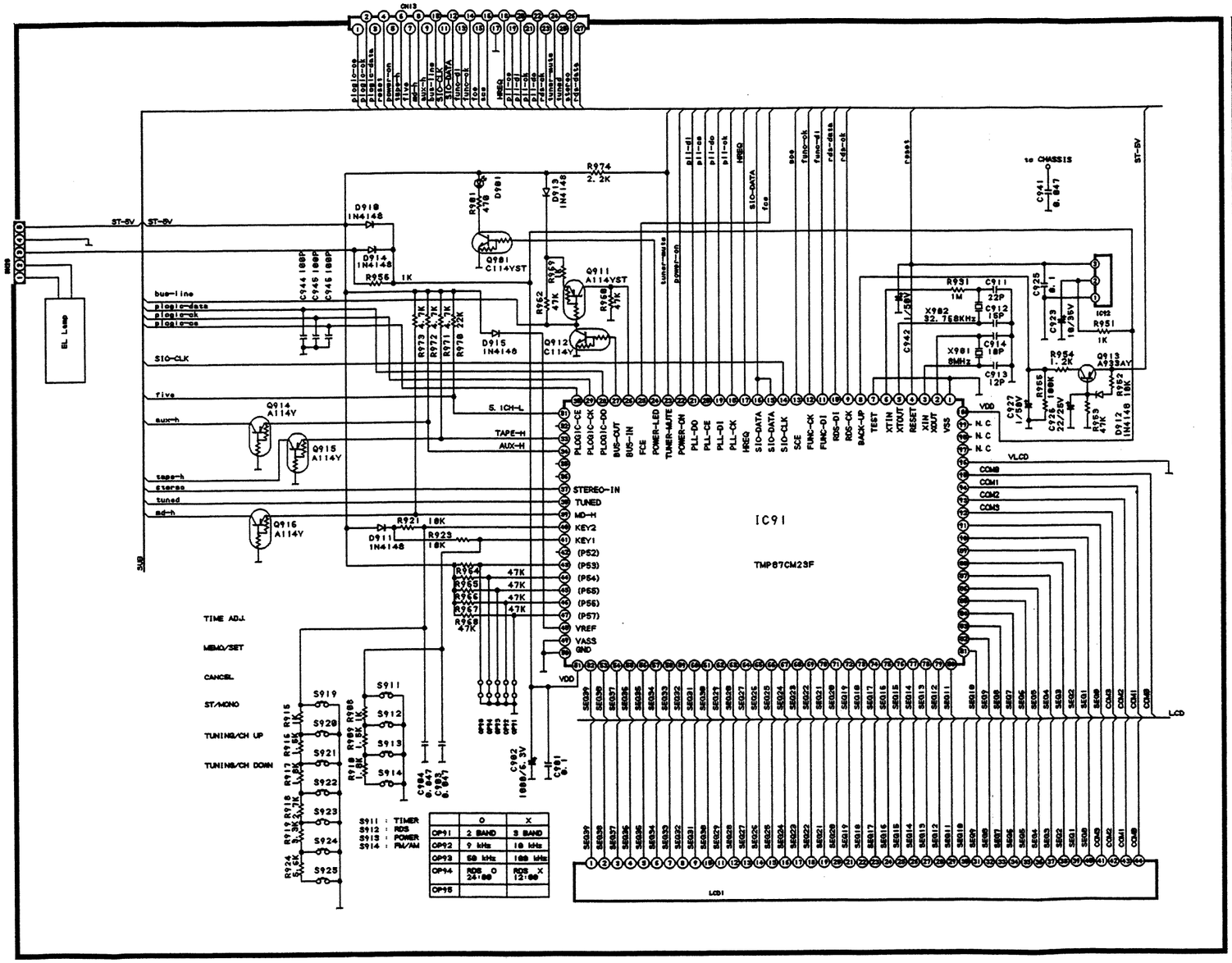
WIRING DIAGRAM



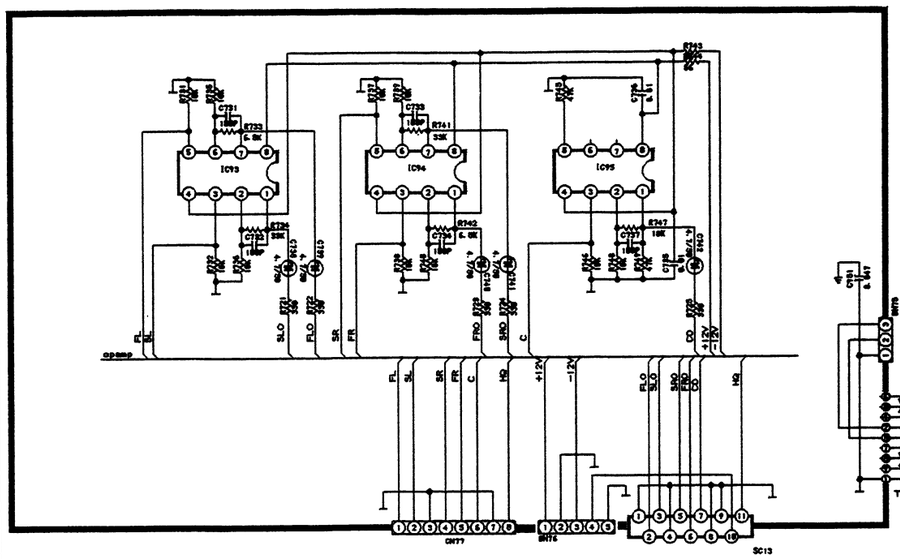
SCHEMATIC DIAGRAM

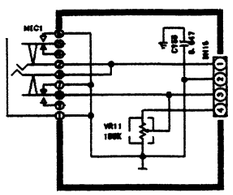


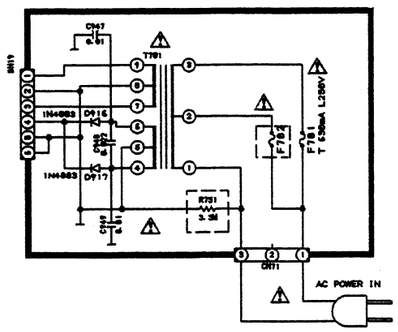
SCHEMATIC DIAGRAM

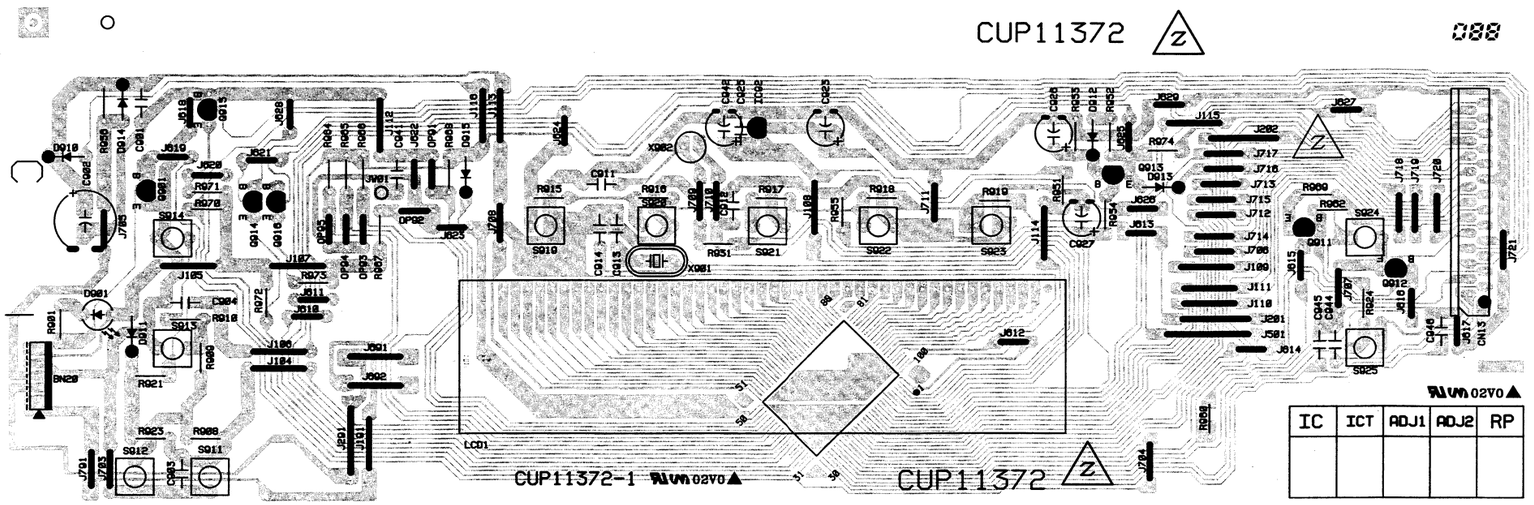


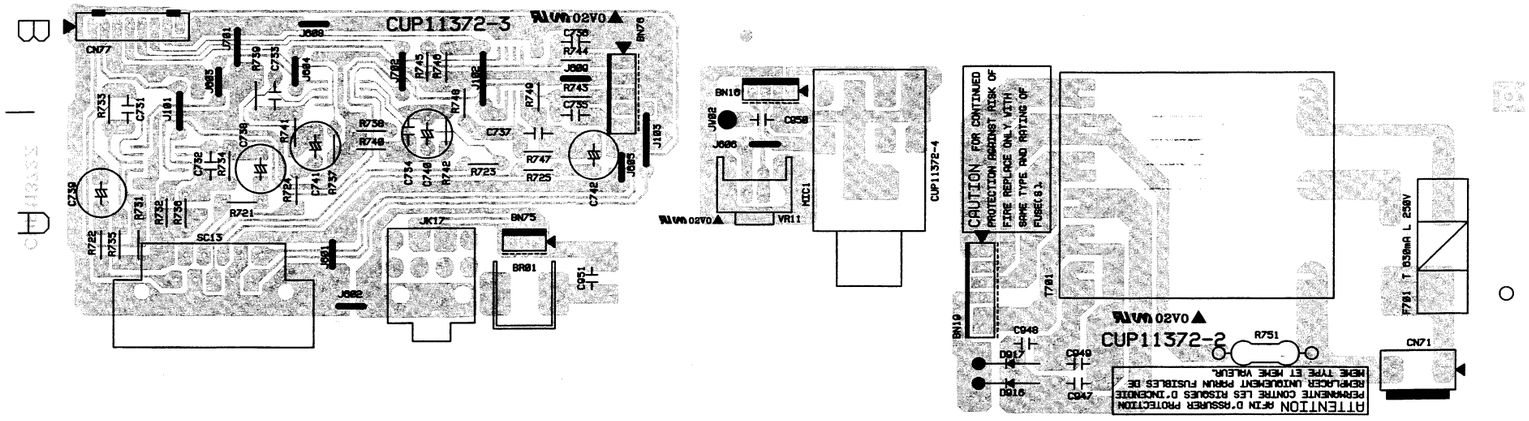
	O	X
OP91	2 BAND	3 BAND
OP92	9 kHz	10 kHz
OP93	50 kHz	100 kHz
OP94	RDS O 24100	RDS X 12100
OP95		



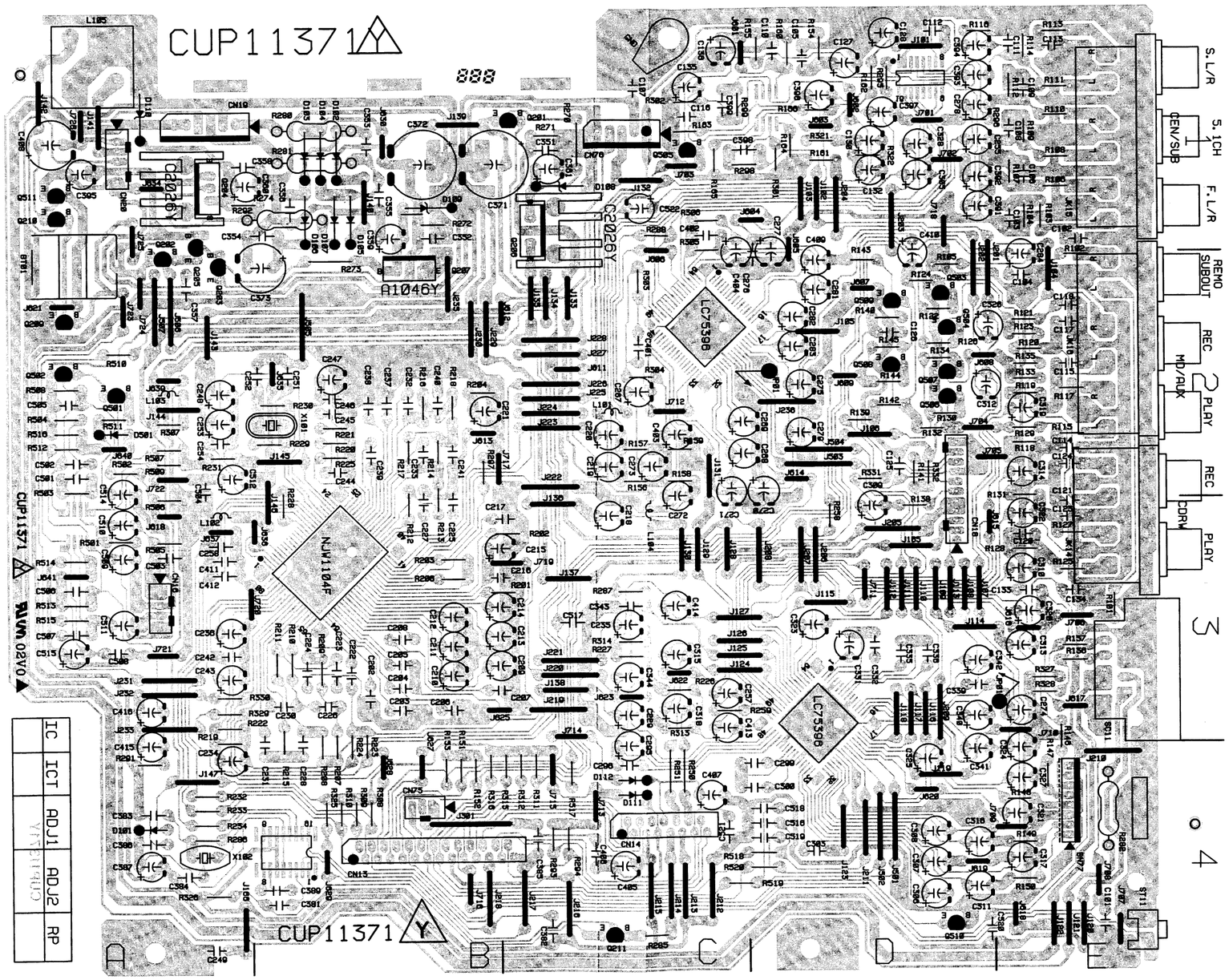




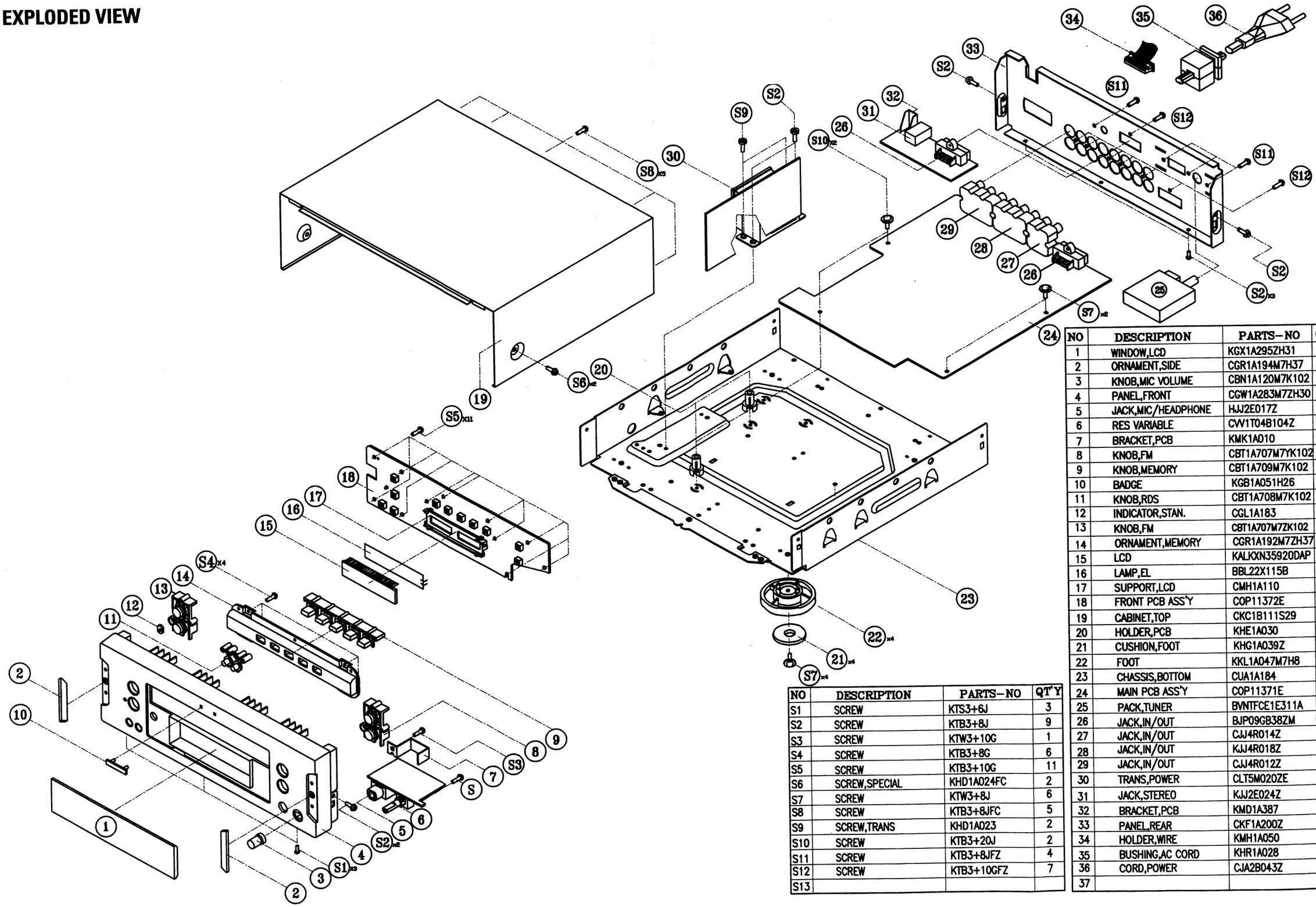

CUP11372
088
CUP11372-1
CUP11372
IC
ICT
ADJ1
ADJ2
RP


CUP11372-3
CUP11372-4
CUP11372-2
CAUTION FOR CONTINUED PROTECTION AGAINST RISK OF FIRE REPLACE ONLY WITH SAME TYPE AND RATING OF FUSE(S).
ATTENTION AFIN D'ASSURER PROTECTION RENVERNEMENT CONTRE LES RISQUES D'INCENDIE REMPLACER UNIQUEMENT PAR UN FUSIBLES DE MEME TYPE ET MEME VALEUR.

PRINTED CIRCUIT BOARDS



EXPLODED VIEW



NO	DESCRIPTION	PARTS-NO	QTY
1	WINDOW,LCD	KGX1A295ZH31	1
2	ORNAMENT,SIDE	CGR1A194M7H37	2
3	KNOB,MIC VOLUME	CBN1A120M7K102	1
4	PANEL,FRONT	CGW1A283M7ZH30	1
5	JACK,MIC/HEADPHONE	HJJ2E017Z	1
6	RES VARIABLE	CVV1T04B104Z	1
7	BRACKET,PCB	KMK1A010	1
8	KNOB,FM	CBT1A707M7YK102	1
9	KNOB,MEMORY	CBT1A709M7K102	1
10	BADGE	KGB1A051H26	1
11	KNOB,RDS	CBT1A708M7K102	1
12	INDICATOR,STAN.	CGL1A183	1
13	KNOB,FM	CBT1A707M7ZK102	1
14	ORNAMENT,MEMORY	CGR1A192M7ZH37	1
15	LCD	KALKXN35920DAP	1
16	LAMP,EL	BBL22X115B	1
17	SUPPORT,LCD	CMH1A110	1
18	FRONT PCB ASS'Y	COP11372E	1
19	CABINET,TOP	CKC1B111S29	1
20	HOLDER,PCB	KHE1A030	1
21	CUSHION,FOOT	KHG1A039Z	4
22	FOOT	KKL1A047M7H8	4
23	CHASSIS,BOTTOM	CUA1A184	1
24	MAIN PCB ASS'Y	COP11371E	1
25	PACK,TUNER	BVNTFCE1E311A	1
26	JACK,IN/OUT	BJP09GB38ZM	1
27	JACK,IN/OUT	CJJ4R014Z	1
28	JACK,IN/OUT	KJJ4R018Z	1
29	JACK,IN/OUT	CJJ4R012Z	1
30	TRANS,POWER	CLT5M020ZE	1
31	JACK,STEREO	KJJ2E024Z	1
32	BRACKET,PCB	KMD1A387	1
33	PANEL,REAR	CKF1A200Z	1
34	HOLDER,WIRE	KMH1A050	1
35	BUSHING,AC CORD	KHR1A028	1
36	CORD,POWER	CJA2B043Z	1
37			

NO	DESCRIPTION	PARTS-NO	QTY
S1	SCREW	KTS3+6J	3
S2	SCREW	KTB3+8J	9
S3	SCREW	KTW3+10G	1
S4	SCREW	KTB3+8G	6
S5	SCREW	KTB3+10G	11
S6	SCREW,SPECIAL	KHD1A024FC	2
S7	SCREW	KTW3+8J	6
S8	SCREW	KTB3+8JFC	5
S9	SCREW,TRANS	KHD1A023	2
S10	SCREW	KTB3+20J	2
S11	SCREW	KTB3+8JFZ	4
S12	SCREW	KTB3+10GFZ	7
S13			

■ ELECTRICAL PARTS LIST

REF. No.	PART No.	DESCRIPTION
	MAIN PCB	
	CUP11371Z	MAIN PCB (PRE , TUNER)
D102 ~ D107	KVD1N4003ST	DIODE
D108 , D109	HVDMTZJ13BT	DIODE , ZENER
D110	HVDMTZJ6.2BT	DIODE , ZENER
Q211	HVTKSC945CYT	T.R
Q501 , Q502	KVTKSC2785YT	T.R
	KMY1A025	HEAT SINK
BN77	CWB2B908120EN	WIRE ASS'Y
BT01	BABGP40BVH3A3H	BATTERY , RECHARGEABLE
CN13	KJP27GA115ZG	WAFER , CARD CABLE
CN14	KJP15GA115ZG	WAFER , CARD CABLE
JK17	HJJ2E024Z	JACK , MINI
C371 , C372	HCEA1EH222E	CAP , ELECT
C373	HCEA1EH102T	CAP , ELECT
IC01 , IC12	HVINJM2068MDTE1	I.C , OP AMP
IC11	HVITC9215AF	I.C
IC21	HVINJW1104F	I.C
IC22 , IC23	HVILC75396E	I.C
IC24	BVIBFU1923FT	I.C , RDS ENCODER
IN01	CLT9E001Z	INVERTER , VOLTAGE
JK14	CJJ4P014Z	JACK , IN/OUT
JK15	CJJ4R012Z	TERMINAL , IN/OUT
JK16	KJJ4R018Z	JACK , PIN BOARD
JP01	CWEH207150PP	WIRE ASS'Y
Q204 , Q206	HVTKTC2026Y	TR , KTC2026Y
Q207	HVTKTA1046Y	TR , KTA1046Y
R280 , R281	KRQ12AJR47H	RES , FUSE
R282	KBA1A3000FAT	FUSE , SUBMINIAITURE
R292	KRG1ANJ330H	RES , METAL OXIDE FILM
SC11	BJP09GB38ZM	WAFER(9P)
ST11	KST1A010Z	SW , TACT
X101	BVFCSA400MG	RESONATOR , CERAMIC
X102	HOX04332A200C	CRYSTAL
	HVNTFCE1E311A	(TUNER , MODULE)
	KWC1C4A15B170B	CARD CABLE
	KWDJ0101000VE	WIRE ASS'Y
	BJP10HB96ZM	A,B CONNECTOR(HOUSHING)
F701	KBA2C0630TLE	FUSE

REF. No.	PART No.	DESCRIPTION
	SUB PCB	
	CUP11372Z	SUB PCB (PRE , TUNER)
D901	KVD342VCTB7T089	L.E.D , RED
D916 , D917	KVD1N4003ST	DIODE
IC92	BVIRE5VL30CARZ	VOLTAGE DETECTOR
Q913	HVT2SA933SRT	T.R
CN71	KJP02KA060ZY	WAFER
CN91	KJP27GB116ZG	WAFER , CARD CABLE(ANGLE)
EL01	BBL22X115B	EL LAMP
IC91	HVIANAM1309T	I.C U-COM
IC93 ~ IC95	HVINJM2068MDTE1	I.C , OP AMP
JK17	HJJ2E024Z	JACK , MINI
LCD1	KALKXN35920DAP	LCD
MIC1	HJJ2E017Z	JACK
SC13	BJP11GB38ZM	WAFER , A , B CONNECTOR
T701	CLT5N023ZW	TRANS , POWER
VR11	CVV1T04B104Z	RES VARIABLE (LG)
X901	KOX08000E160C	CRYSTAL
X902	BOX00032A120C	CRYSTAL
IN01	CLT9E001Z	INVERTER , VOLTAGE
	KWC1C4A27B180B	CARD CABLE

DECK

MEASUREMENT AND ADJUSTMENT METHODS

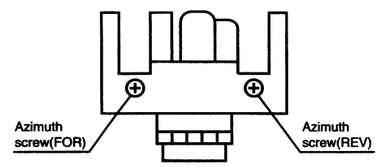
Measurement condition
- Dolby NR position: OFF
- Make sure heads are clean
- Make sure capstan and pressure roller are clean.

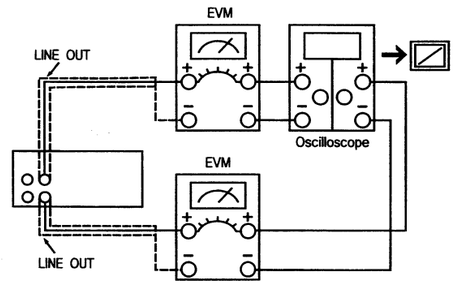
MEASURING INSTRUMENTS
- EVM(Electronic Voltmeter)
- Oscilloscope
- Frequency counter
- AF Oscillator
- DC Voltmeter
- ATT(Attenuator)
- Resistor (600Ω)

Test tape
- Head azimuth (10KHz, -10dB): MTT-114N
- Tape speed(3KHz, -10dB): MTT-111N
- Playback frequency response (125Hz, 1KHz, 10KHz, -10dB)
- Playback gain: MTT-150
- Blank tape
  Normal blank tape: STT-5513
  CrO_2 blank tape: STT-5563
  Metal blank tape: STT-5572

HEAD AZIMUTH ADJUSTMENT

1. Test equipment connections are shown in fig. 1.
2. Playback the head Azimuth test tape and requlate the angle adjust screw so that the outputs of L-ch and R-ch are maximized. (When the adjusting positions are different with L-ch and R-ch, find a position where the outputs of L-ch and R-ch are balanced and then make the adjustment.)
3. At the same time, obtain a lissajous waveform and eliminate phase deflection.
4. After the adjustment, apply screw lock to the angle adjusting value.



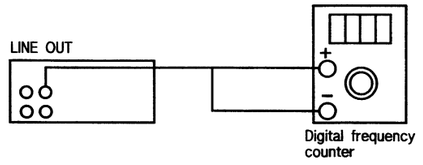


(FIG. 1)

TAPE SPEED ADJUSTMENT

1. Test equipment connections are shown in fig. 2.
2. Playback the middle part of the test tape.

Adjustment point	VR41
Standard Value	3,000Hz ±30Hz

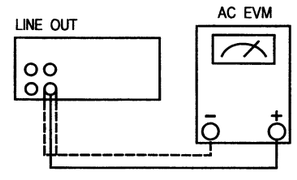


(FIG. 2)

PLAYBACK GAIN ADJUSTMENT

1. Test equipment connections are shown in fig. 3.
2. Playback the playback gain test tape. (MTT-150).
3. Adjust playback gain.

Adjustment Point	L ch : VR11	R ch : VR12
Standard Value	550mV	

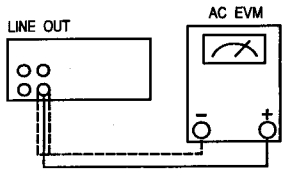


(FIG. 3)

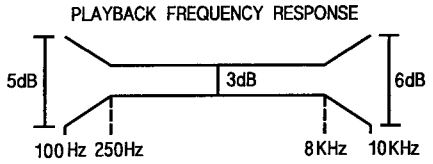
QUEL-09188 / Druck 14

PLAYBACK FREQUENCY RESPONSE

1. Testequipment connections are shown in fig. 4.
2. Playback the playback frequency response test tape.
3. Check that the frequency response is within the range shown in Fig. 5 for both L-ch and R-ch.



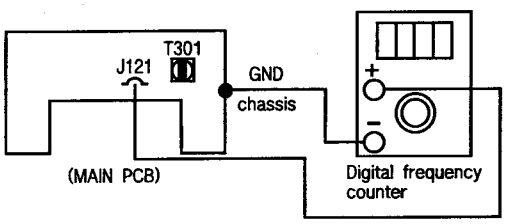
(FIG. 4)



(FIG. 5)

BIAS FREQUENCY ADJUSTMENT

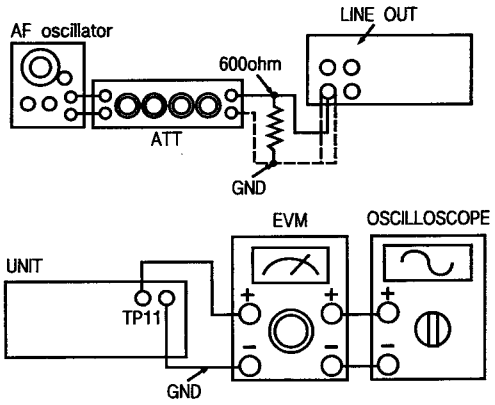
1. Test equipment connections are shown in fig. 6.
2. Load a CrO_2 blank test tape.
3. Press the record and pause button.
4. Adjust T301 for 105KHz frequency counter reading.



(FIG. 6)

OVERALL GAIN ADJUSTMENT

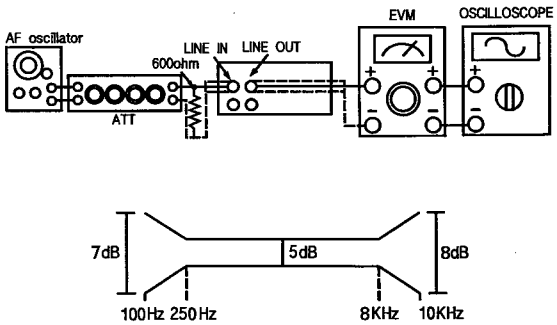
1. Test equipment connections are shown in fig. 7.
2. Insert the normal reference blank tape.
3. Place UNIT into recorde mode.
4. Supply a 1KHz signal through ATT (-10dB) from AF oscillator to line in.
5. Adjust ATT until monitor level at (L-CH) or(R-CH) becomes 180mV.
6. Playback recorded tape and make sure that the output level at (L-CH) or (R-CH) becomes 180mV.
7. If measured value is not 180mV, adjust it by using VR21 (L-CH) or VR22 (R-CH).
8. Repeat from step (2).



(FIG. 7)

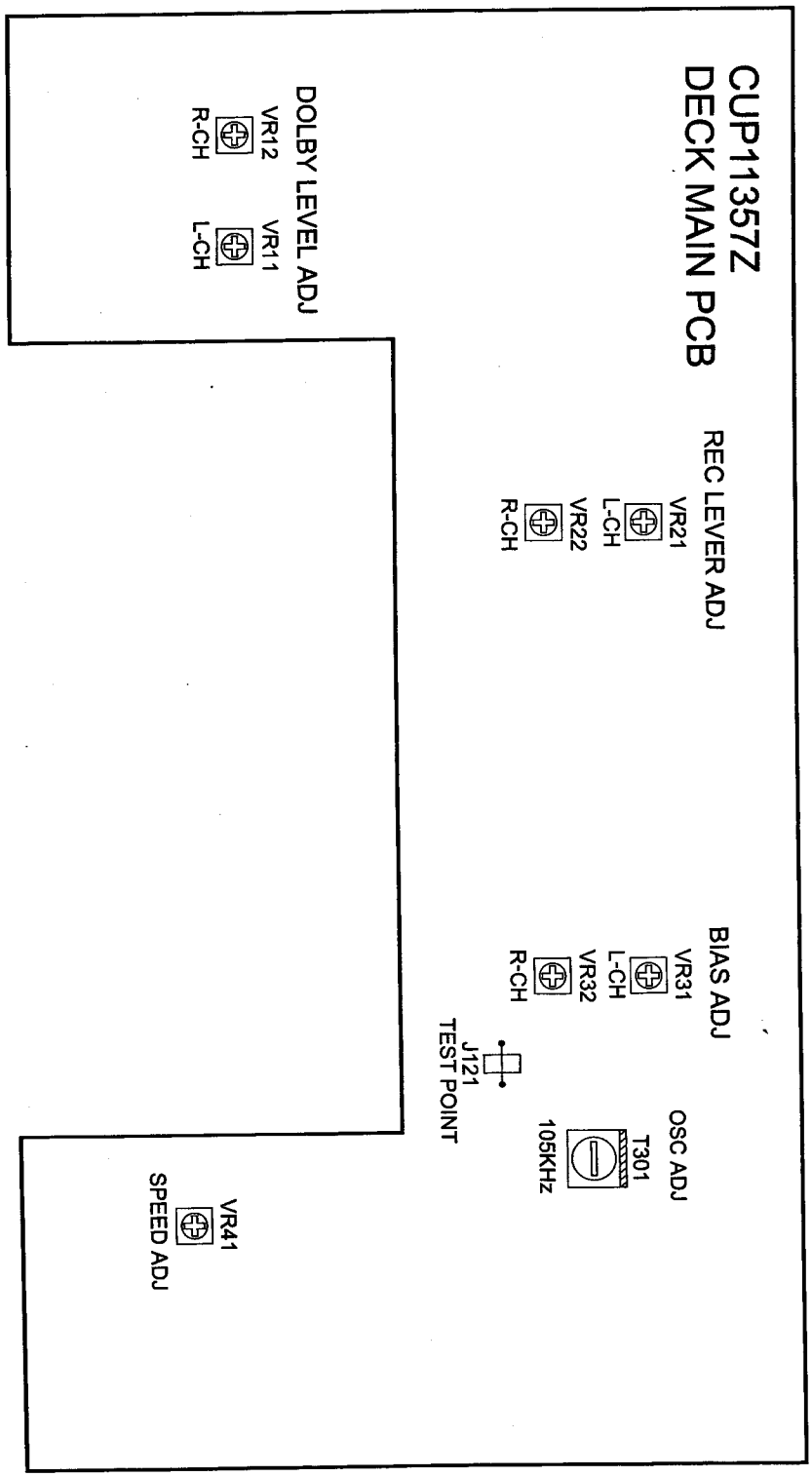
OVERALL FREQUENCY RESPONSE

1. Set a normal blank tape (MTT-5511) and record by apply signal (100Hz, 1KHz, 10KHz) through ATT-from AF oscillator to line in (Line out Level: 33mV).
2. Playback the signal recorded in step 1, and check that the level of each output frequency in within the range shown in fig. 8 in comparison with the reference frequency (1KHz).
3. If it is not within the standard range adjust the bias current by using VR31 (L-CH) or VR32 (R-CH) so that the frequency level is within the standard.
   - Level up in high frequency range...Increase the bias current.
   - Level down in high frequency range...Decrease the bias current.
4. After that. increase the signal recorded on CrO_2 blank tape (STT-5563) and metal blank tape (STT-5572) up to 10KHz and adjust in the same way as mentioned above and check that the frequency level is within the range shown in Fig. 8.



(FIG. 8)

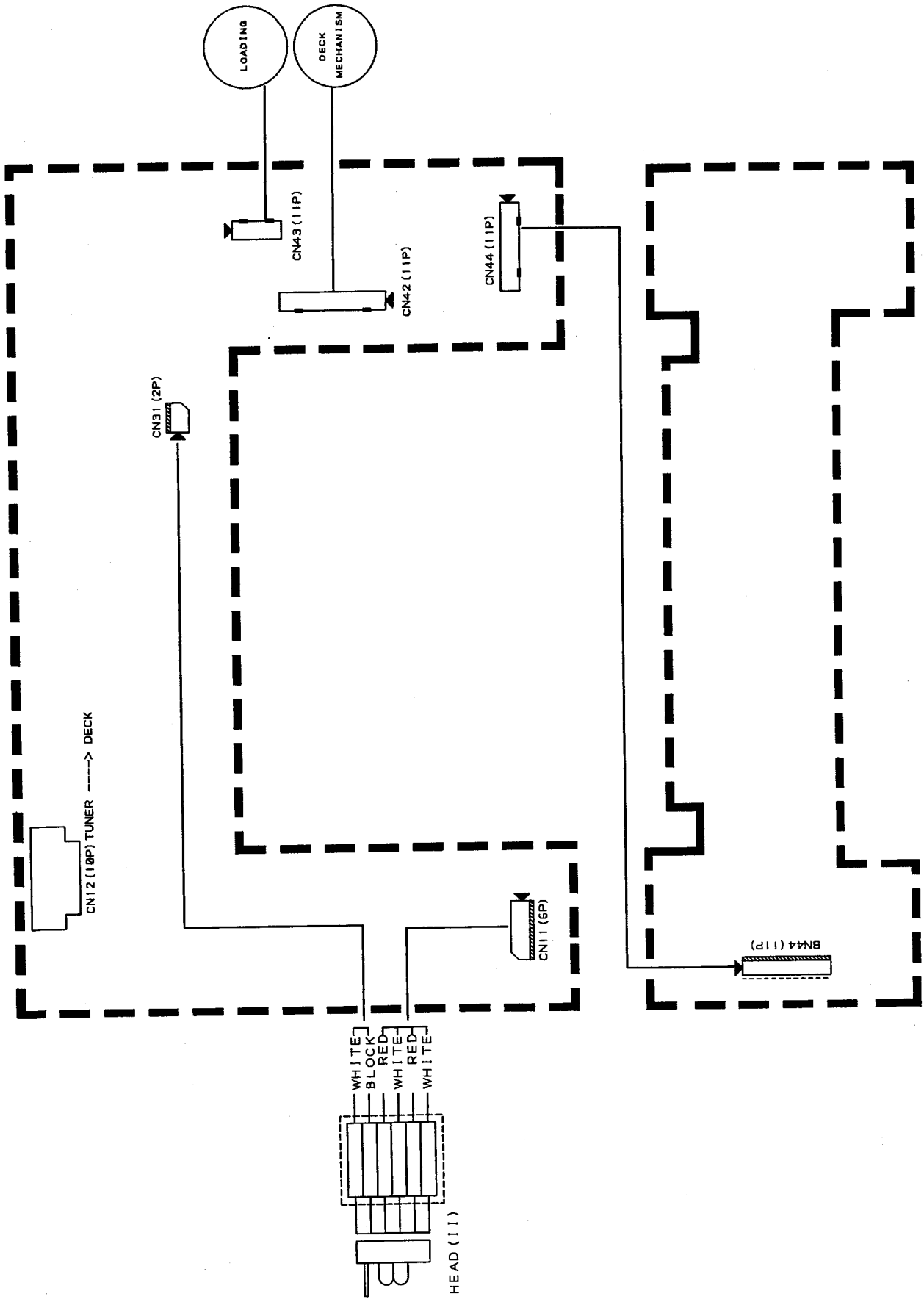
ADJSTMENT DIAGRAM



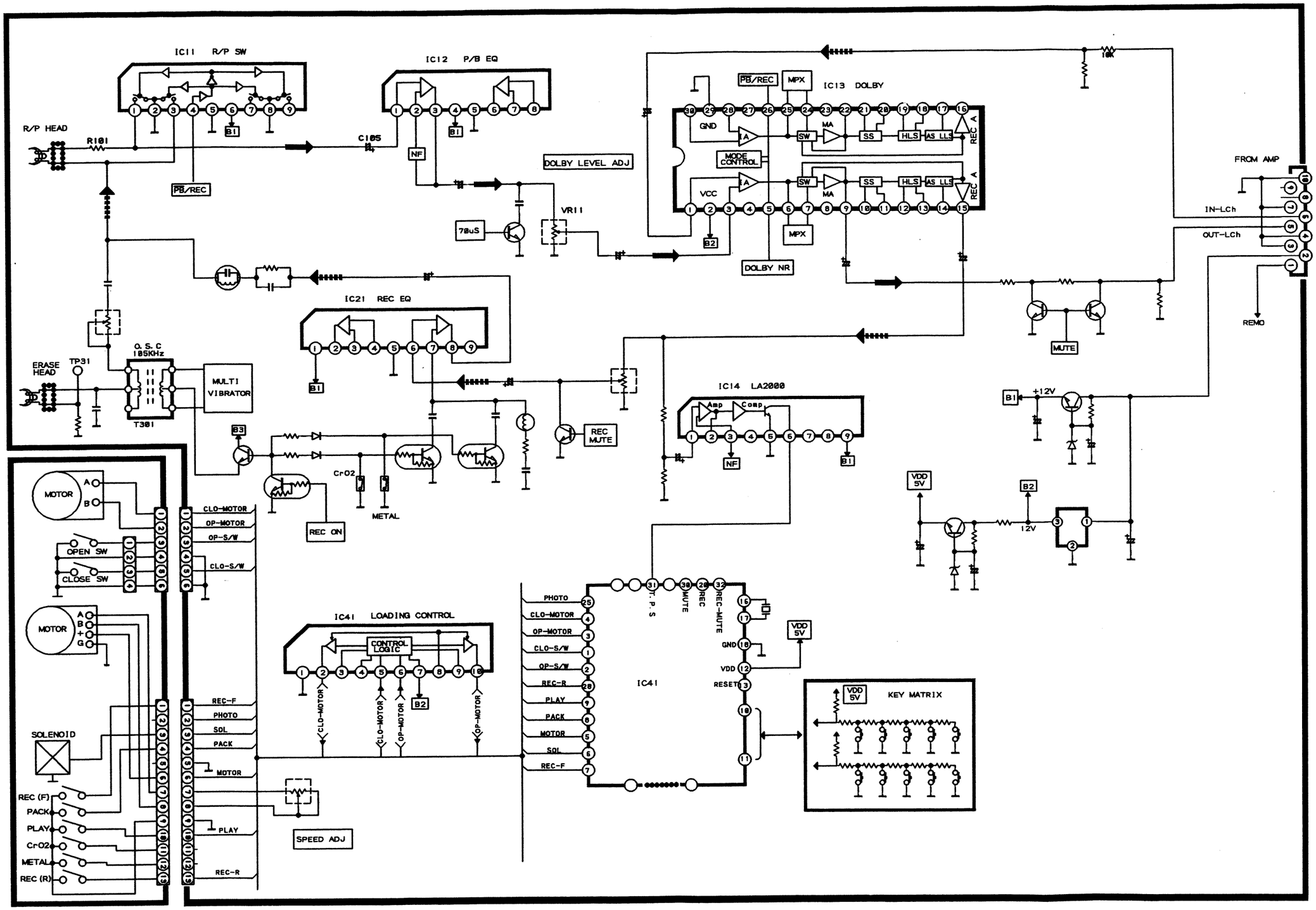
u-COM IC (ANAM1314D , M37531E4FP)

PIN No.	PIN NAME	I/O	DESCRIPTION
1	$\overline{\text{CL-SW}}$	IN	LODAING CLOSE DETECTOR S/W
2	$\overline{\text{OP-SW}}$	IN	LODAING OPEN DETECTOR S/W
3	OP-MOTOR	OUT	OPEN LOADING MOTOR CONTROL
4	CL-MOTOR	OUT	CLOSE LOADING MOTOR CONTROL
5	MOTOR	OUT	MOTOR CONTROL
6	SOL	OUT	SOLENOID CONTROL
7	REC-F	IN	REC-FORWARD S/W DETECTOR
8	PACK	IN	PACK S/W DETECTOR
9	PLAY	IN	PLAY S/W DETECTOR
10,11	KEY IN	IN	KEY SCAN
12	VDD	-	VDD, +5V
13	$\overline{\text{RESET}}$	IN	RESET CONTROL
14	GND	-	GND
15	VDD	-	VDD, +5V
16,17	X1, X2	-	CRYSTAL IN/OUT
18	GND		GND
19	$\overline{\text{REV-MODE}}$ LED	OUT	LED ON/OFF CONTROL
20	$\overline{\text{REC}}$ LED	OUT	LED ON/OFF CONTROL
21	R-PLAY LEO	OUT	LED ON/OFF CONTROL
22	F-PLAY LEO	OUT	LED ON/OFF CONTROL
23	POWER LEO	OUT	LED ON/OFF CONTROL
24	$\overline{\text{DOLBY-B}}$ LEO	OUT	LED ON/OFF CONTROL
25	PHOTO	IN	PHOTO SENSOR DATA INPUT
26	REMOTE IN	IN	REMOTE INPUT
27	REMOTE OUT	OUT	REMOTE OUTPUT
28	REC-R	IN	REC-REVERSE S/W DETECTOR
29	$\overline{\text{DOLBY-C}}$ LED	OUT	LED ON/OFF CONTROL
30	MUTE	OUT	MUTE ON/OFF CONTROL
31	TPS	IN	TOP DETECOR
32	REC-MUTE	OUT	REC MUTE ON/OFF CONTROL
33	MOTOR SPEED	OUT	MOTOR SPEED CONTROL

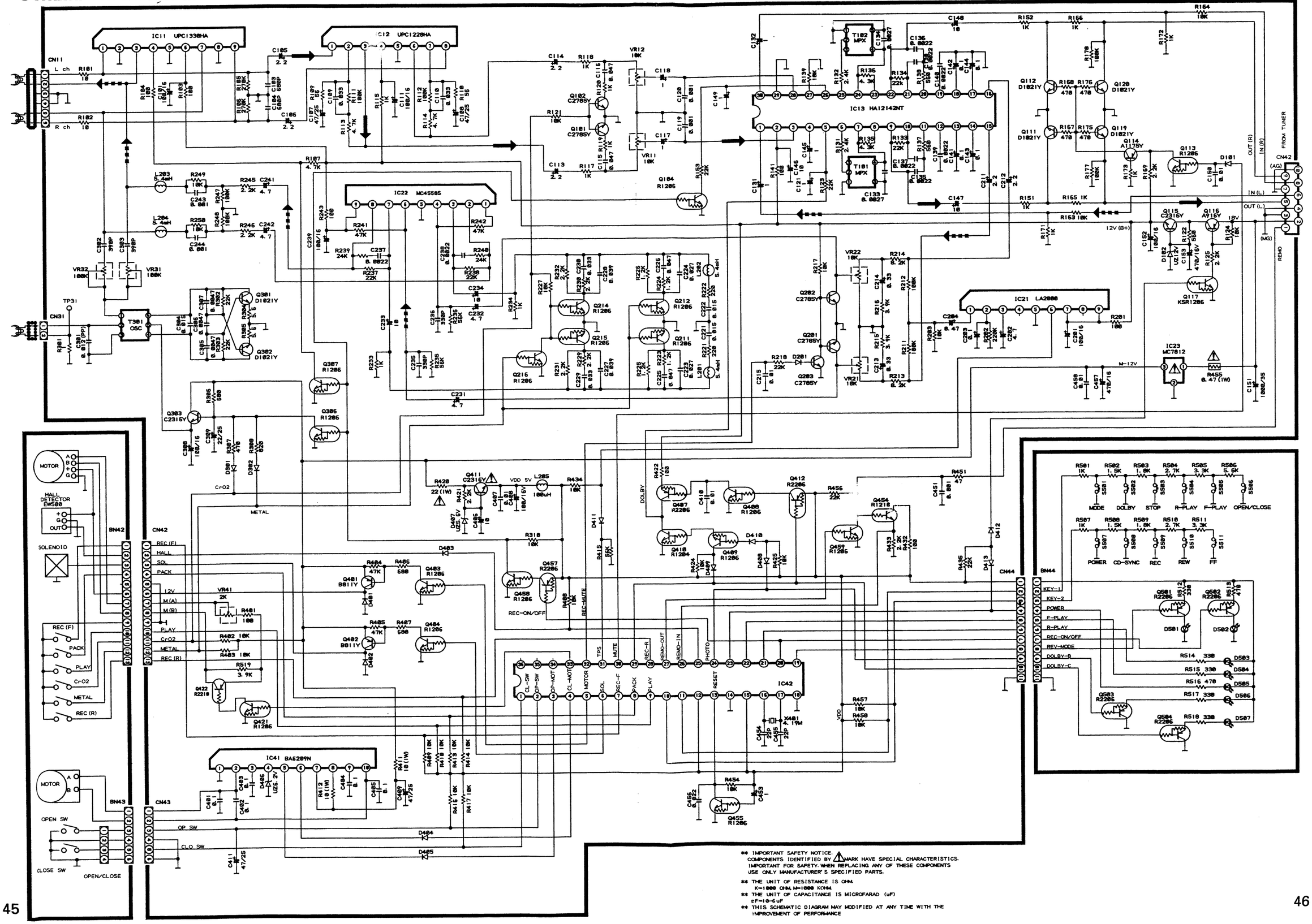
WIRING DIAGRAM



BLOCK DIAGRAM



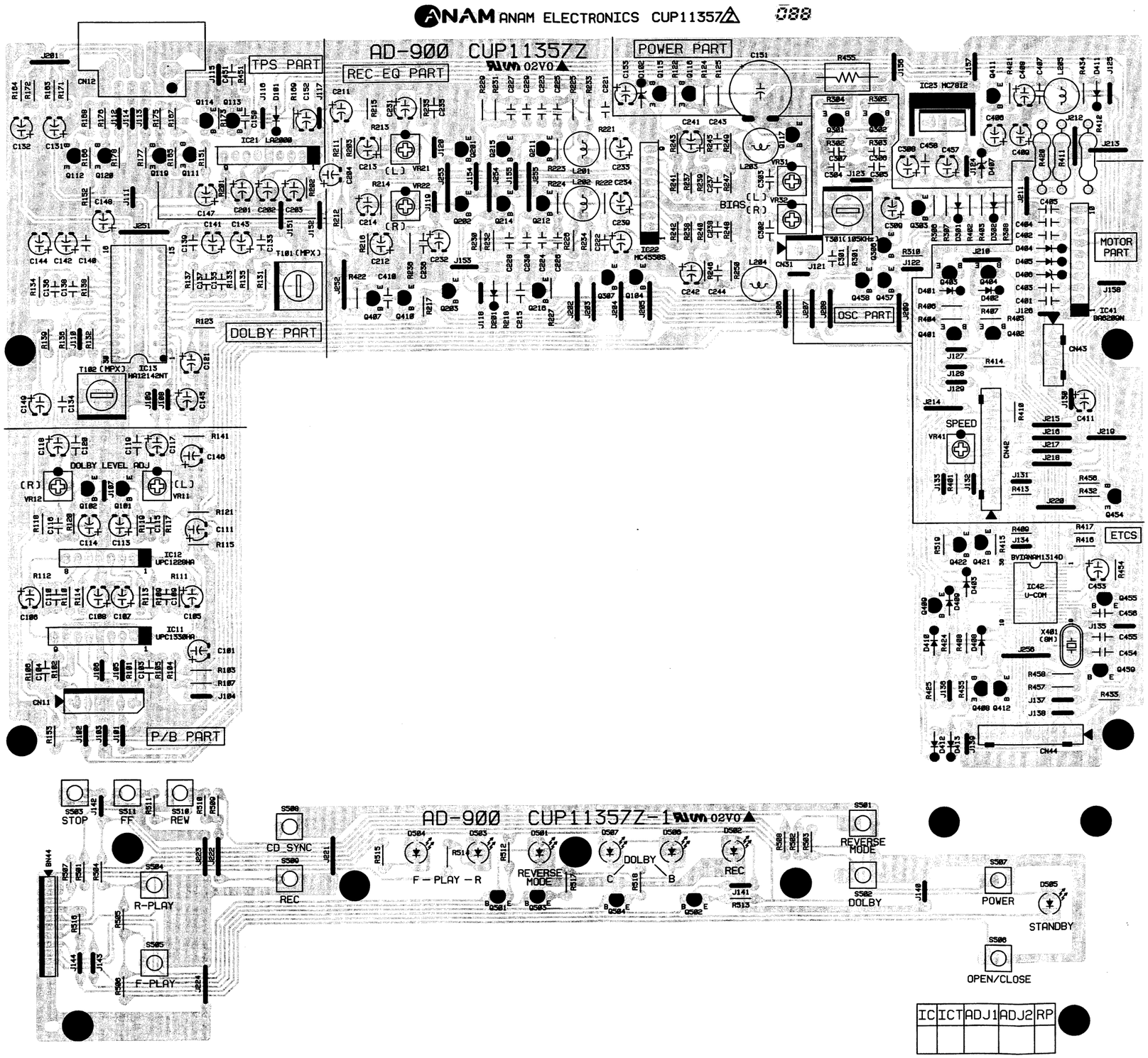
SCHEMATIC DIAGRAM



** IMPORTANT SAFETY NOTICE:
COMPONENTS IDENTIFIED BY ⚠ MARK HAVE SPECIAL CHARACTERISTICS.
IMPORTANT FOR SAFETY. WHEN REPLACING ANY OF THESE COMPONENTS
USE ONLY MANUFACTURER'S SPECIFIED PARTS.

** THE UNIT OF RESISTANCE IS OHM.
K=1000 OHM, M=1000 KOHM
** THE UNIT OF CAPACITANCE IS MICROFARAD (uF)
pF=10-6uF
** THIS SCHEMATIC DIAGRAM MAY MODIFIED AT ANY TIME WITH THE
IMPROVEMENT OF PERFORMANCE

PRINTED CIRCUIT BOARDS



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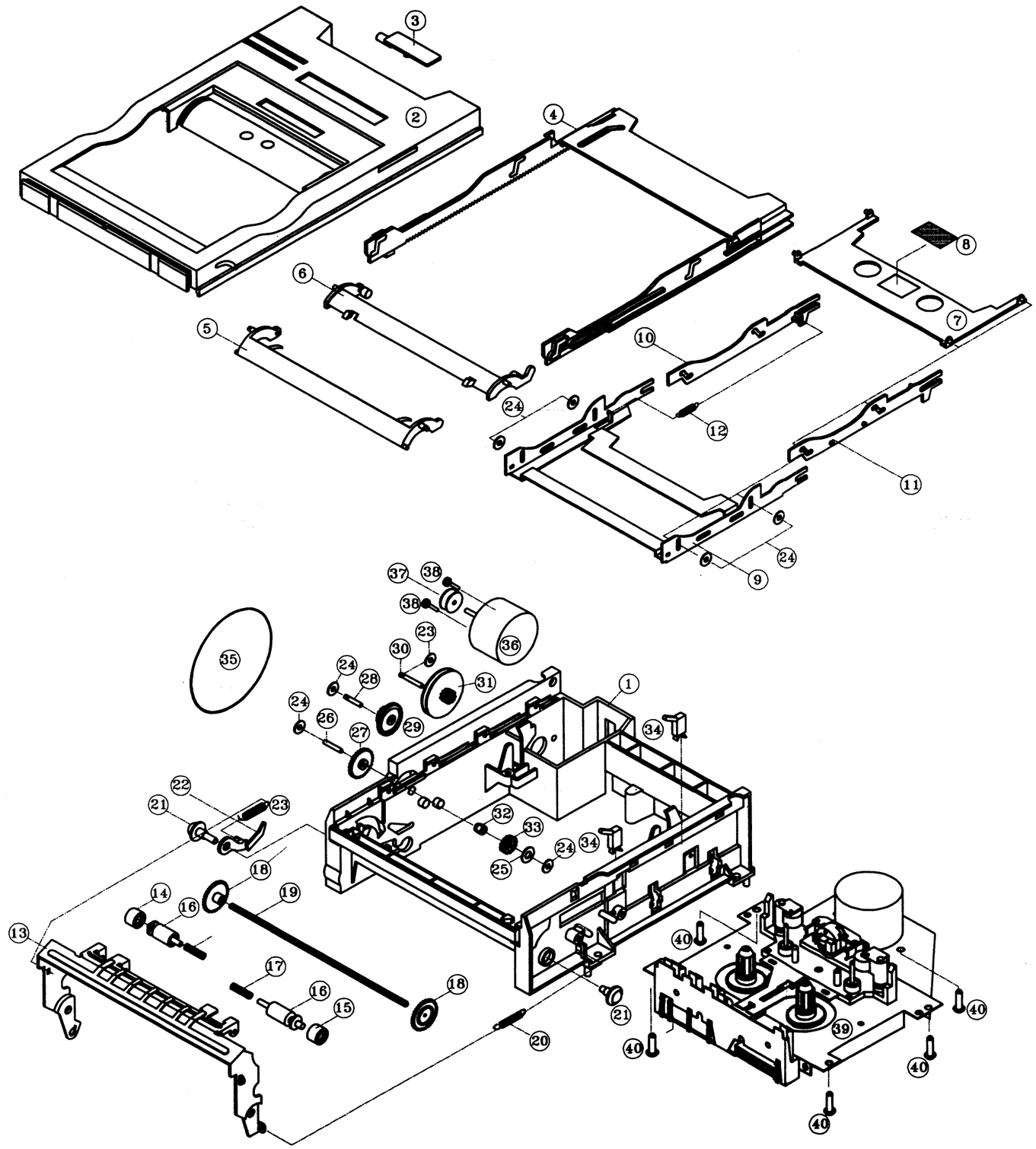
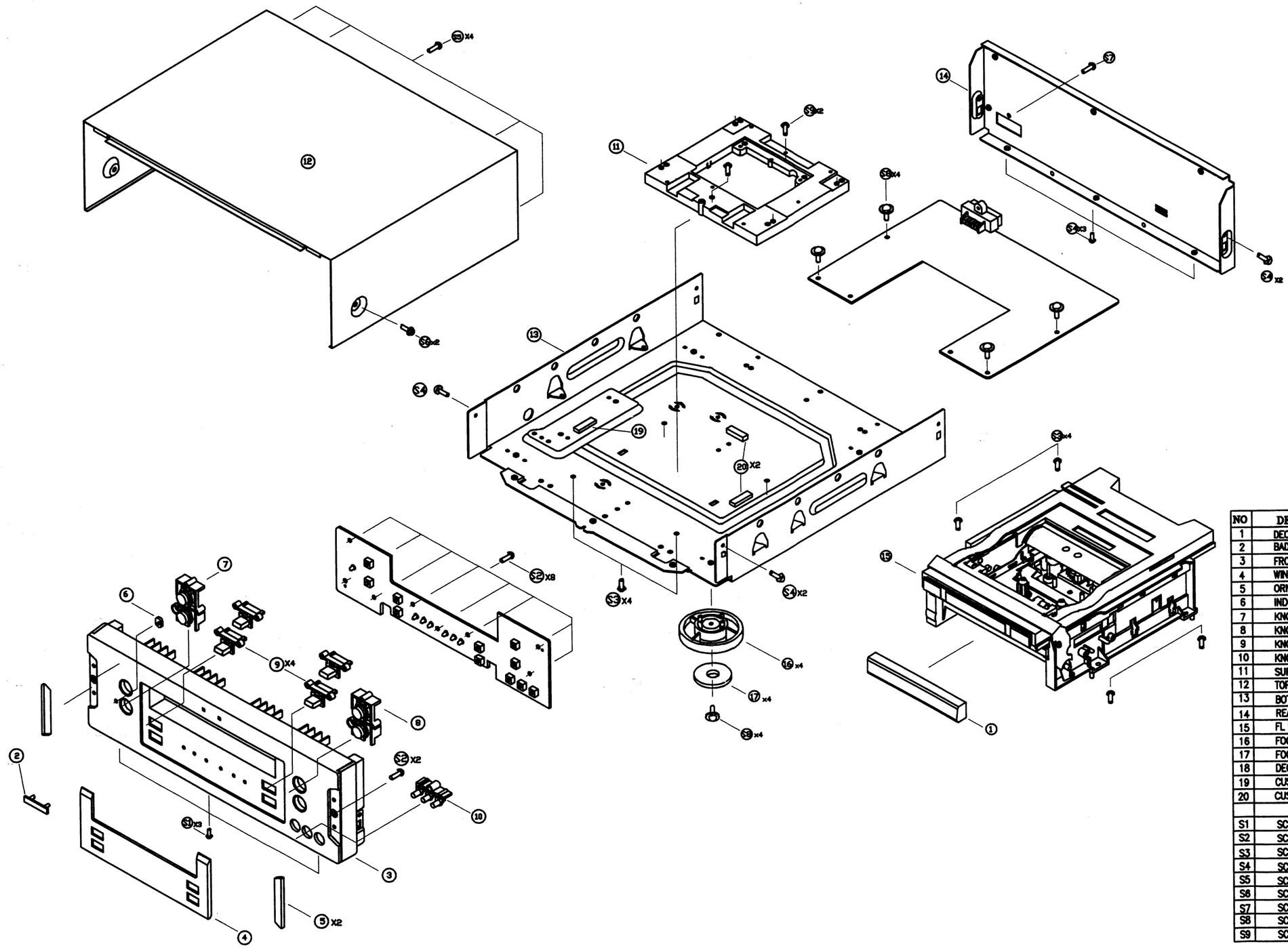
MECHANSM



NO.	PARTS NO.	DESCRIPTION	Q'TY	REMARKS
1	KDI1A005	BASE	1	
2	KDD1A005	TRAY	1	
3	KKR1A019	STOPPER	1	
4	KKR1A017	TRNASFER	1	
5	KKR1A016	LINKER , FRONT	1	
6	KKR1A015	LINKER , REAR	1	
7	KKR1A014	PLATTER , TAPE	1	
8	KKR1104B	REFLETOR	1	
9	KKR1A013	PLATTER , LOADING	1	
10	KDD1A009	TRAY , SUB(L)	1	
11	KDD1A006	TRAY , SUB(R)	1	
12	KUS1A063	SPRING , TRAY	1	
13	[illegible]A023	ARM , PUSH	1	
14	[illegible]026	ROLL , SILICONE(L)	1	
15	[illegible]027	ROLL , SILICONE(R)	1	
16	KKU1A026	HOLDER , BAR	2	
17	KUS1A067	SPRING ,COIL	2	
18	KDG1A010	GEAR , TRAY	2	
19	KDF1A009	SHAFT , BAR	1	
20	KUS1A065	SPRING , PUSH ARM	1	
21	KHD1A010	SCREW , SPECIAL	2	
22	KDD1A007	LATCH	1	
23	KUS1A064	SPRING , LINKER	2	
24	KNW1A012	POLY,WASHER	8	
25	KNW1A013	POLY,WASHER(L)	1	
26	KDF1A012	SHAFT , PIN	1	
27	KDG1A012	GEAR(A) , IDLE	1	
28	KDF1A010	SHAFT , GEAR	1	
29	KDG1A013	GEAR(B) , IDLE	1	
30	KDF1A011	SHAFT , PIN	1	
31	KDR1A014	GEAR , PULLEY	1	
32	KDD1A008	BUSHING , SERRATION	1	
33	KDG1A011	GEAR , PINION	1	
34	BSH1A005Z	SWITCH , LEAF(MLS-1)	2	
35	KDV1A003	BELT	1	
36	KDM3220B1	MOTOR	1	
37	KDR1A010	PULLEY , MOTOR	1	
38	KSB26+4	SCREW	2	
39	KJD1G2S12Z	DECK MECHANISM	1	
40	KTB3+8G	SCREW	5	

EXPLODED VIEW



NO	DESCRIPTION	PARTS-NO	QT'Y	REMARKS
1	DECK DOOR	CGR1A195M7ZH37	1	
2	BADGE	KGB1A051H26	1	
3	FRONT PANEL	CGW1A282M7ZH30	1	
4	WINDOW ,LCD	KGX1A296ZH31	1	
5	ORNAMENT,SIDE	CGR1A194M7H37	2	
6	INDICATOR,STAN	CGL1A183	1	
7	KNOB,FM	CBT1A707M7XK78	1	
8	KNOB,FM	CBT1A707M7WK78	1	
9	KNOB,MODE	CBT1A710M7K78	4	
10	KNOB,CPS	CBT1A711M7K78	1	
11	SUPPORT,MECHA	CMH1A111	1	
12	TOP CABINET	CKC1B111S29	1	
13	BOTTOM CHASSIS	CUA1A184	1	
14	REAR PANEL	CKF1A201Z	1	
15	FL MECHA' ASS'Y	CJDAD900NCCR/P	1	
16	FOOT	KKL1A047M7H8	4	
17	FOOT CUSHION	KHG1A039Z	4	
18	DECK PCB ASS'Y		1	
19	CUSHION	KHG1A140	1	
20	CUSHION	KHG1A024	2	
S1	SCREW	KTS3+6J	4	
S2	SCREW	KTB3+10G	10	
S3	SCREW	KTB3+8G	10	
S4	SCREW	KTB3+6J	7	
S5	SCREW	KTB3+8JFC	4	
S6	SCREW	KHD1A024FC	2	
S7	SCREW	KTB3+10GFZ	1	
S8	SCREW	KTW3+8J	8	
S9	SCREW	KTB3+8J	2	

■ ELECTRICAL PARTS LIST

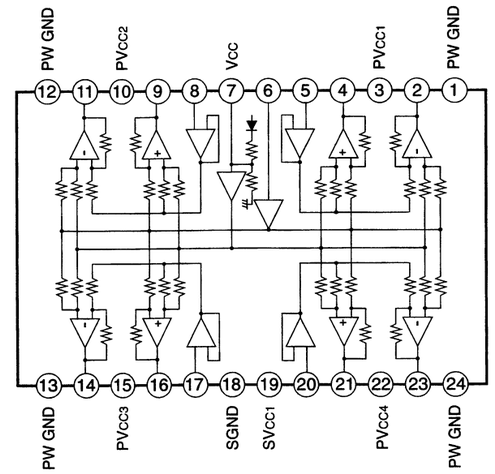
REF. No.	PART No.	DESCRIPTION
	MAIN PCB	
BN44	CWB2B911130EN	WIRE ASS'Y
CN11	KJP06GA01ZM	WAFER
CN12	BJP10GB38ZM	WAFER
CN31	KJP02GA01ZM	WAFER
CN42	KJP13GA19ZM	WAFER
CN43	KJP06GA19ZM	WAFER
CN44	KJP11GA19ZM	WAFER
C151	HCEA1VH102E	CAP , ELECT
C153	HCEA1CH471T	CAP , ELECT
C301	KCQP1123JZ3	CAP , STYROLE
D102	HVDMTZJ12BT	DIODE , ZENER
D401 , D402	KVD1N4003SRT	DIODE , RECT
D406	HVDMTZJ6.2BT	DIODE , ZENER
D407	HVDMTZJ5.6BT	DIODE , ZENER
D501 , D503	KVD342MCTB7T089	L.E.D (GREEN)
D505	KVD342MCTB7T089	L.E.D (GREEN)
D506 , D507		
D502 , D505	KVD342VCTB7T089	L.E.D (RED)
IC11	BVIUPC1330HA	I.C
IC12	BVIUPC1228HA	I.C
IC13	BVIHA12142NT	I.C , DOLBY
IC21	BVILA2000	I.C
IC22	HVIMC4558S	I.C
IC23	CVIMC7812TA	I.C , REGULATOR
IC41	KVIBA6209N	I.C
L203 , L204	CLM9C008Z	COIL , TRAP
L205	CLQB101KLZ	COIL
L201 , L202	CLQB542KLZ	COIL , PEAKING
Q101 ,Q102	HVTKSC2785YT	T.R
Q201 ~ Q203		
Q114	HVTKSA1175YT	T.R
Q116	HVTKSA916YT	T.R
Q115 , Q303	HVTKSC2316YT	T.R
Q411	HVTKSC2316YT	T.R
Q401 , Q402	HVTKSB811YT	T.R
R411 , R412	KRG1ANJ100H	RES , METAL OXIDE FILM
R420	KRG1ANJ220H	RES , METAL OXIDE FILM
R455	KRQ1CJR47	RES , FUSE
S501 ~ S511	CST1A012ZT	SW , TACT
T101 , T102	CLM9C002-S	COIL , MPX
T301	HL08C004-S	COIL , BIAS
VR11 , VR12	KVN1RA103B01T	RES , SEMIFIXED
VR21	KVN1RA103B01T	RES , SEMIFIXED
VR22		
VR31 , VR32	KVN1RA104B01T	RES , SEMIFIXED
VR41	BVN1PA102B01T	RES , SEMIFIXED
X401	KOX08000E160C	CRYSTAL
-	CJD1G2S32Z	MECHANISM , R/P

CD

TA2092N (POWER DRIVER)

PIN No.	NAME	DESCRIPTION
1	PW GND	Power GND Connected to substrate. ①, ⑫, ⑬, ㉔ pin are connected inside.
2	OUT (-) 1	Inverted output for CH1
3	PV_{CC1}	Supply terminal of output stage for CH1 Supply terminal of output stage are not connected to other channel terminal.
4	OUT (+) 1	Non-inverted output for CH1
5	V_{IN1}	Input for CH1. Not biased inside
6	V_{RI}	Input reference voltage Under condition of $V_{RI} \leqq 1.8V$, internal bias circuit is shut off. No signal input condition : $V_{RI} = V_{IN}$
7	V_{CI}	Output reference voltage. $V_{OUT} = V_{CI} = (V_{CC}-V_F)/2$
8	V_{IN2}	Input for CH2
9	OUT (+) 2	Non-inverted output for CH2
10	PV_{CC2}	Supply terminal of output stage for CH2
11	OUT (-) 2	Inverted output for CH2
12	PW GND	Power GND
13	PW GND	Power GND
14	OUT (-) 3	Inverted output for CH3
15	PV_{CC3}	Supply terminal of output stage for CH3
16	OUT (+) 3	Non-inverted output for CH3
17	V_{IN3}	Input for CH3
18	S GND	Supply terminal of small signal GND
19	S Vcc	Small signal GND
20	V_{IN4}	Input for CH4
21	OUT (+) 4	Non-inverted output for CH4
22	PV_{CC4}	Supply terminal of output stage for CH4
23	OUT (-) 4	Inverted output for CH4
24	PW GND	Power GND

BLOCK DIAGRAM



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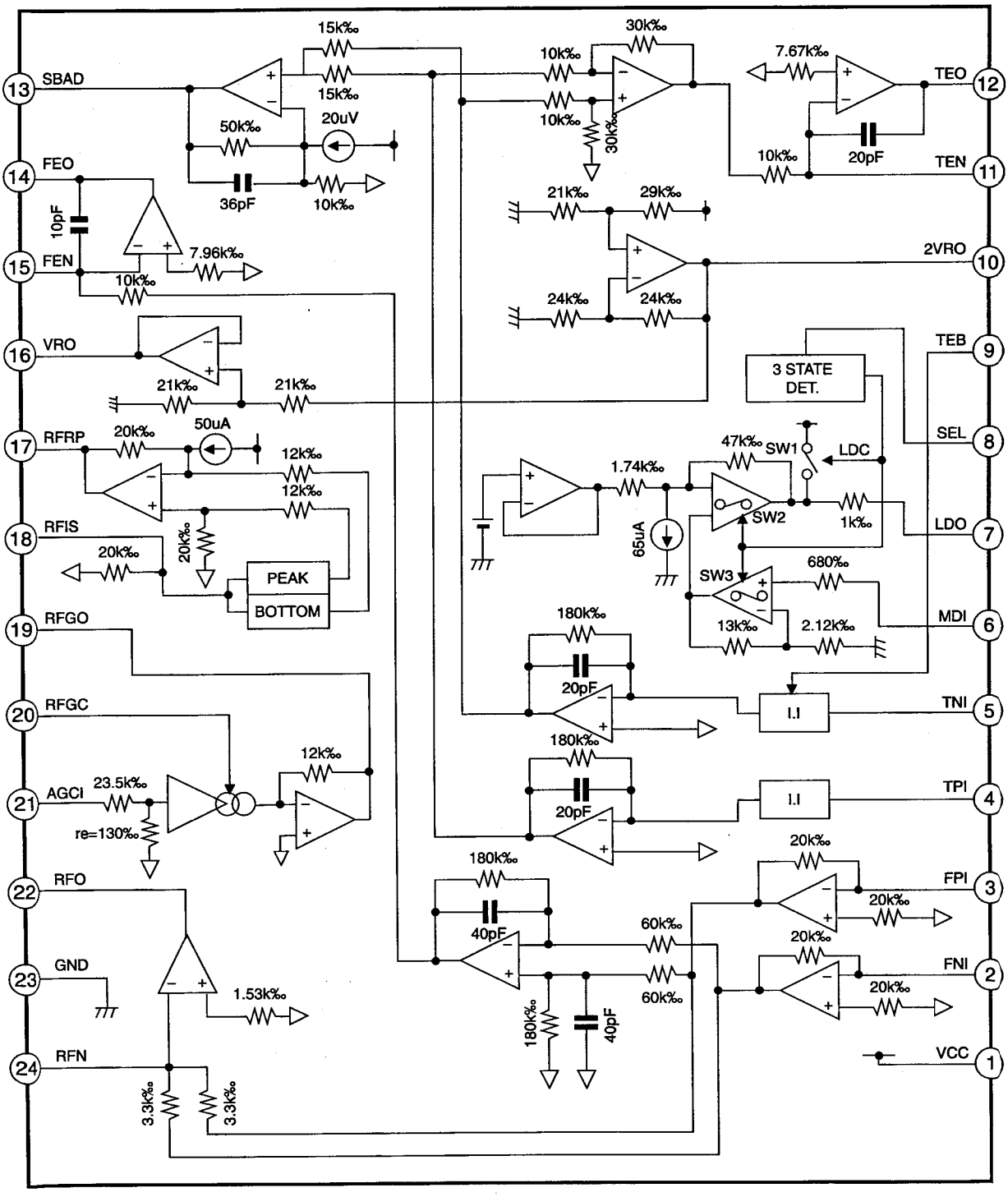
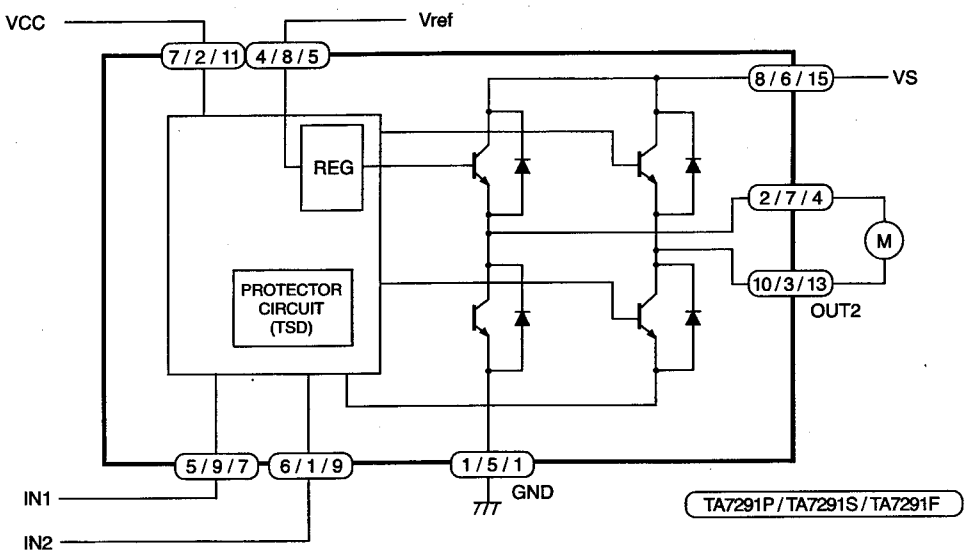
TA2109F (RF/DIGITAL SERVOR)



TA2109F (RF/DIGITAL SERVOR)

PIN No.	NAME	I/O	DESCRIPTION	REMARK
1	VCC	-	Power supply input terminal	-
2	FNI	I	Main beam I-V amp input terminal	Connected to pin diode A,C
3	FPI	I	Main beam I-V amp input terminal	Connected to pin diode B,D
4	TPI	I	Sub beam I-V amp input termianl	Connected to pin diode F
5	TNI	I	Sub beam I-V amp input termianl	Connected to pin diode E
6	MDI	I	Monitor phono diode amp input terminal	Connected to monitor photo diode
7	LDO	O	Laser diode amp output terminal	Connected to laser control circuit
8	SEL	I	Laser diode control signal input terminal and APC circuit ON/OFF control signal input terminal	3 signal input (Vcc, Hi-Z, GND)
9	TEB	I	Tracking error balance adjustment signal input terminal. Controlled by 3 PWM signal (PWM carrier = 88.2 kHz)	3 signal input (2 VREF, VR, GND)
10	2VRO	O	Reference voltage (2 VREF) output terminal 2 VREF = 4.2V when Vcc = 5V	-
11	TEN	I	TE amp negative input terminal	Connected to TEO through feedback register
12	TEO	O	TE error signal output terminal	-
13	SBAD	O	Sub beam adder signal output terminal	-
14	FEO	O	Focus error signal output terminal	-
15	FEN	I	FE amp negative input terminal	Connected to FEO through feedback register
16	VRO	O	Reference voltage (VREF) output terminal VREF = 2.1V when Vcc = 5V	-
17	RFRP	O	Track count signal output terminal	-
18	RFIS	I	RFRP detect circuit input terminal	Connected to RFO through condenser
19	RFGO	O	RF gain signal output terminal	-
20	RFGC	I	RF amplitude adjustment control signal input terminal. Controlled by 3 PWM signal (PWM carrier = 88.2 kHz)	3 signal input (2 VREF, VR, GND)
21	AGCI	I	RF signal amplitude adjustment amp input terminal	Connected to RFO through condenser
22	RFO	O	RF signal output terminal	-
23	GND	-	Ground terminal	-
24	RFN	I	RF amp negative input terminal	-

TA7291S (Bridge Driver)



PIN No.			SYMBOL	FUNCTIONAL DESCRIPTION
P	S	F		
7	2	11	Vcc	Supply voltage terminal for Logic
8	6	15	Vs	Supply voltage terminal for motor drive
4	8	5	Vref	Supply voltage terminal for control
1	5	1	GND	GND terminal
5	9	7	IN1	Input terminal
6	1	9	IN2	Input terminal
2	7	4	OUT1	Output terminal
10	3	13	OUT2	Output terminal

- P Type : PIN ③, ⑨ : NC
- S Type : PIN 4 : NC
- F Type : PIN ②, ③, ⑥, ⑧, ⑩, ⑫, ⑭, and ⑯ : NC
- For F Type, We recommend FIN to be connected to the GND.

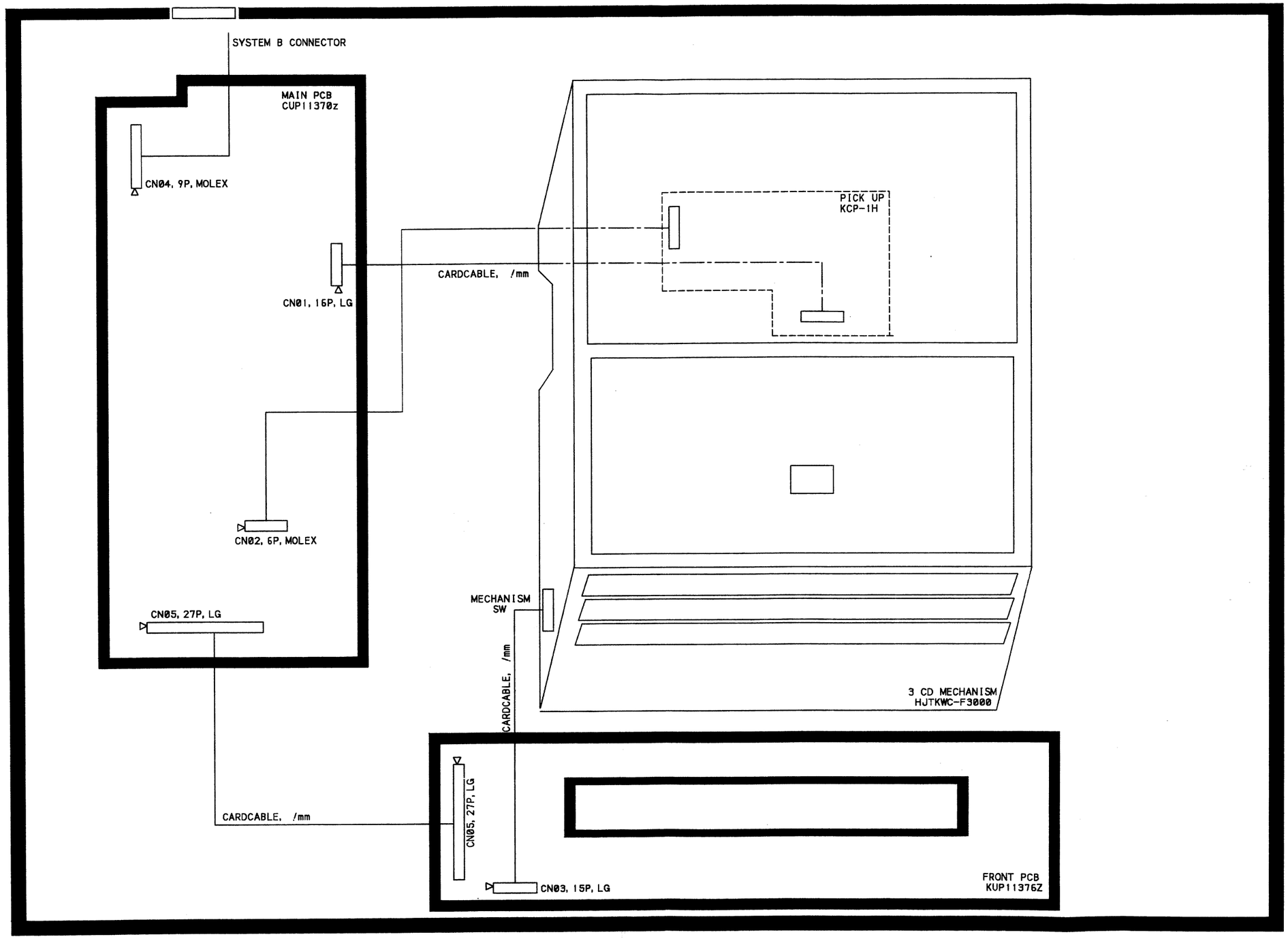
TC9432AF/ TC9462AF (Digital Signal Processor)

<table>
<tr><th>PIN No.</th><th>NAME</th><th>I/O</th><th>FUNCTIONAL DESCRIPTION</th><th>REMARKS</th></tr>
<tr><td>1</td><td>TEST0</td><td>-</td><td>Test mode terminal. Normally, keep at open.</td><td>With pull-up resistor.</td></tr>
<tr><td>2</td><td>$\overline{\text{HSO}}$</td><td>O</td><td rowspan="2">Playback speed mode flag output terminal.
<table><tr><th>$\overline{\text{UHSO}}$</th><th>$\overline{\text{HSO}}$</th><th>PLAYBACK SPEED</th></tr><tr><td>H</td><td>H</td><td>Normal</td></tr><tr><td>H</td><td>L</td><td>2 times</td></tr><tr><td>L</td><td>H</td><td>4 times</td></tr><tr><td>L</td><td>L</td><td>-</td></tr></table></td><td rowspan="2">-</td></tr>
<tr><td>3</td><td>$\overline{\text{UHSO}}$</td><td>O</td></tr>
<tr><td>4</td><td>EMPH</td><td>O</td><td>Subcode Q data emphasis flag output terminal.
Emphasis ON at "H" level and OFF at "L" level.
The output polarity can invert by command.</td><td>-</td></tr>
<tr><td>5</td><td>LRCK</td><td>O</td><td>Channel clock output terminal. (44.1 kHz)
L-ch at "L" level and R-ch at "H" level.
The output polarity can invert by command.</td><td>-</td></tr>
<tr><td>6</td><td>Vss</td><td>-</td><td>Digital GND terminal.</td><td>-</td></tr>
<tr><td>7</td><td>BCK</td><td>O</td><td>Bit clock output terminal. (1.4112 MHz)</td><td>-</td></tr>
<tr><td>8</td><td>AOUT</td><td>O</td><td>Audio data output terminal.</td><td>-</td></tr>
<tr><td>9</td><td>DOUT</td><td>O</td><td>Digital data output terminal.</td><td>-</td></tr>
<tr><td>10</td><td>MBOV</td><td>O</td><td>Buffer memory over signal output terminal.
Over at "H" level.</td><td>-</td></tr>
<tr><td>11</td><td>IPF</td><td>O</td><td>Correction flag output terminal.
At "H " level, AOUT output is made to correction impossibility by C2 correction processing.</td><td>-</td></tr>
<tr><td>12</td><td>SBOK</td><td>O</td><td>Subcode Q data CRCC check adjusting result output terminal. The adjusting result is OK at "H" level.</td><td>-</td></tr>
<tr><td>13</td><td>CLCK</td><td>I/O</td><td>Subcode P~W data readout clock input/output terminal. This terminal can select by command bit.</td><td>-</td></tr>
<tr><td>14</td><td>VDD</td><td>-</td><td>Digital power supply voltage terminal.</td><td>-</td></tr>
<tr><td>15</td><td>Vss</td><td>-</td><td>Digital GND terminal.</td><td>-</td></tr>
<tr><td>16</td><td>DATA</td><td>O</td><td>Subcode P~W data output terminal.</td><td>-</td></tr>
<tr><td>17</td><td>SFSY</td><td>O</td><td>Playback frame sync signal output terminal.</td><td>-</td></tr>
<tr><td>18</td><td>SBSY</td><td>O</td><td>Subcode block sync signal output terminal.</td><td>-</td></tr>
<tr><td>19</td><td>SPCK</td><td>O</td><td>Processor status signal readout clock output terminal.</td><td>-</td></tr>
<tr><td>20</td><td>SPDA</td><td>O</td><td>Processor status signal output terminal.</td><td>-</td></tr>
<tr><td>21</td><td>COFS</td><td>O</td><td>Correction frame clock output terminal. (7.35 kHz)</td><td>-</td></tr>
<tr><td>22</td><td>MONIT</td><td>O</td><td>Internal signal (DSP internal flag and PLL clock) output terminal. Selected by command.</td><td>-</td></tr>
<tr><td>23</td><td>VDD</td><td>-</td><td>Digital power supply voltage terminal.</td><td>-</td></tr>
<tr><td>24</td><td>TESIO0</td><td>I</td><td>Test input/output terminal. Normally, keep at "L" level.</td><td>-</td></tr>
<tr><td>25</td><td>P2VREF</td><td>-</td><td>PLL double reference voltage supply terminal.</td><td>-</td></tr>
<tr><td>26</td><td>HSSW</td><td>O</td><td>2/4 times speed at "VREF" voltage.</td><td>2-state output (PVREF,HiZ)</td></tr>
<tr><td>27</td><td>ZDET</td><td>O</td><td>1 bit DA converter zero detect flag output terminal.</td><td>-</td></tr>
<tr><td>28</td><td>PDO</td><td>O</td><td>Phase difference signal output terminal of EFM signal and PLCK signal.</td><td>3-state output (P2VREF,PVREF,VSS)</td></tr>
<tr><td>29</td><td>TMAXS</td><td>O</td><td>TMAX detection result output terminal. Selected by command bit (TMPS).</td><td>-</td></tr>
<tr><td>30</td><td>TMAX</td><td>O</td><td>TMAX detection result output terminal. Selected by command bit (TMPS).
<table><tr><th>DIFFERENCE RESULT</th><th>TMAX OUTPUT</th></tr><tr><td>Longer than fixed ferq.</td><td>"P2VREF"</td></tr><tr><td>Shorter than fixed freq.</td><td>"VSS"</td></tr><tr><td>Within the fixed freq.</td><td>"HiZ"</td></tr></table></td><td>3-state output (P2VREF,HiZ,VSS)</td></tr>
</table>

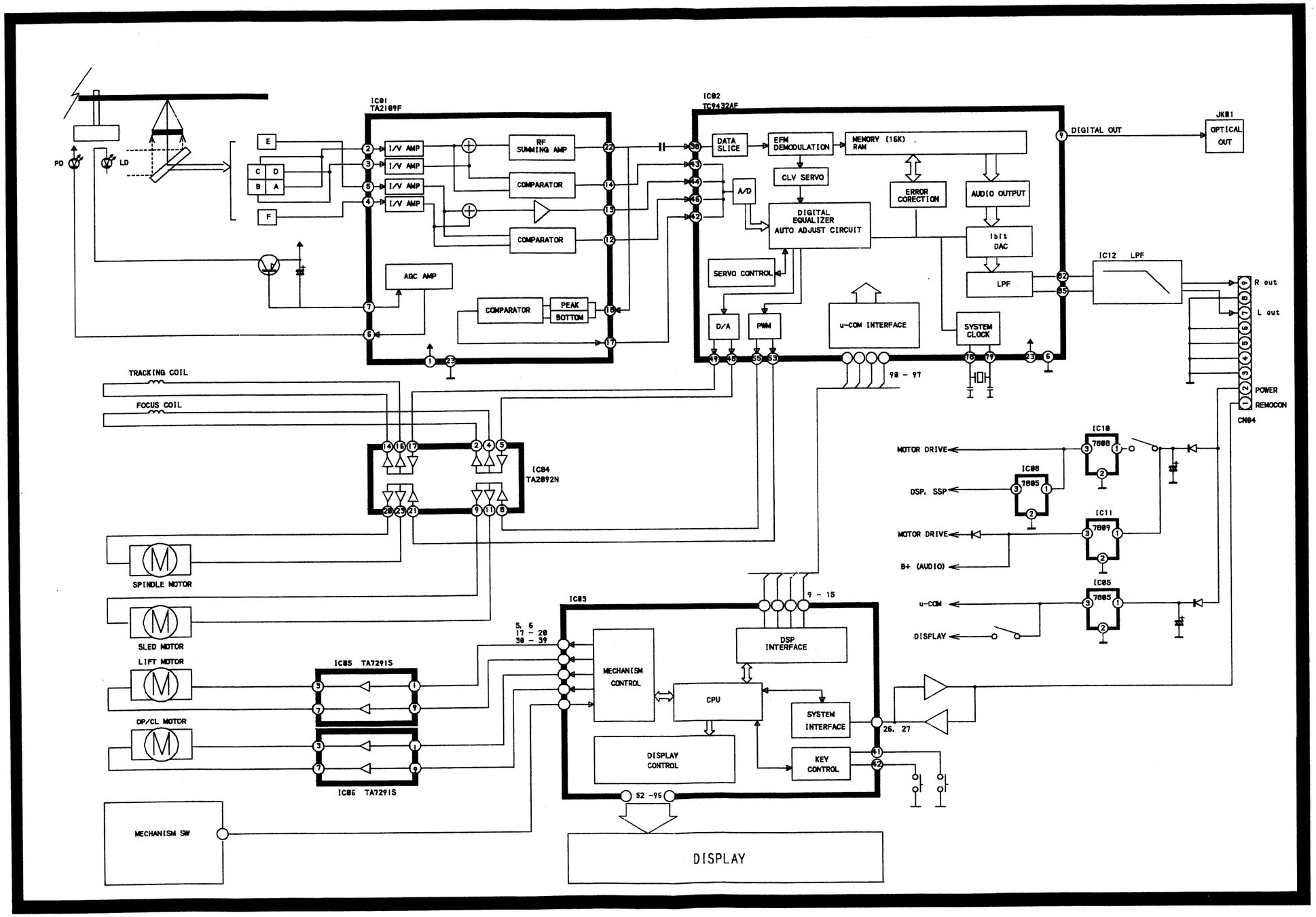
PIN No.	NAME	I/O	FUNCTIONAL DESCRIPTION	REMARKS
31	LPFN	I	LPF amplifier inverting input terminal for PLL.	Analog input.
32	LPFO	O	LPF amplifier output terminal for PLL.	Analog output.
33	PVREF	-	PLL reference voltage supply terminal.	-
34	VCOREF	I	VCO center frequency reference level terminal. Normally, keep at "PVREF" level.	-
35	VCOF	O	VCO filter terminal.	Analog output.
36	AVSS	-	Analog GND terminal.	-
37	SLCO	O	Data slice level output terminal.	Analog output.
38	RFI	I	RF signal input terminal.	Analog input (Zin : selected by command)
39	AVDD	-	Analog power supply voltage terminal.	-
40	RFCT	I	RFRP signal center level input terminal.	Analog input (Zin : 50kΩ)
41	RFZI	I	RFRP zero cross input terminal.	Analog input.
42	RFRP	I	RF ripple signal input terminal.	Analog input.
43	FEI	I	Focus error signal input terminal.	Analog input.
44	SBAD	I	Sub-beam adder signal input terminal.	Analog input.
45	TSIN	I	Test input terminal. Normally, keep at "VREF" level.	Analog input.
46	TEI	I	Tracking error signal input terminal. Track in at tracking servo on.	Analog input.
47	TEZI	I	Trcaking error zero cross input terminal.	Analog input (Zin : 10kΩ)
48	FOO	O	Focus servo equalizer output terminal.	Analog output (2VREF~AVSS)
49	TRO	O	Tracking servo equalizer output terminal.	
50	VREF	-	Analog reference voltage supply terminal.	-
51	RFGC	O	RF amplitude adjustment control signal output terminal.	3-state PWM signal output. (2VREF, VREF, VSS) (PWM carrier = 88.2 kHz)
52	TEBC	O	Tracking balance control signal output terminal.	
53	TEBC	O	Feed equalizer output terminal.	
54	TEBC	O	Speed error signal or feed search equalizer output terminal.	
55	DMO	O	Disk equalizer output terminal. (PWM carrier = 88.2 kHz for DSP, Synchronize to PXO)	3-state PWM signal output.(2VREF, VREF, VSS)
56	2VREF	-	Analog double reference voltage supply terminal.	-
57	SEL	O	APC circuit ON/OFF indication signal output terminal. At the laser on time, UHF = L at "HiZ" level and UHF = H at "H" level.	-
58	FLGA	O	Extemal flag output terminal for internal signal. Can select signal from TEZC, $\overline{FOON}$, $\overline{FOK}$ and RFZC by command.	-
59	FLGB	O	Extemal flag output terminal for internal signal. Can select signal from $\overline{DECT}$, $\overline{FOON}$, $\overline{FMON}$ and RFZC by command.	-
60	FLGC	O	Extemal flag output terminal for internal signal. Can select signal from TRON, $\overline{TRSR}$, $\overline{FOK}$ and $\overline{SRCH}$ by command.	-
61	FLGD	O	Extemal flag output terminal for internal signal. Can select signal from $\overline{TRON}$, $\overline{DMON}$, $\overline{HYS}$ and $\overline{SHC}$ by command.	-
62	VDD	-	Digital power supply voltage terminal.	-
63	VSS	-	Digital GND terminal.	-
64	IO0	I/O	General I/O terminal. Can change over input port or output port by command. At the input mode time can readout a state of terminal (H/L) by read command. At the output mode time can control a state of terminal (H/L/HiZ) by command.	-
65	IO1			
66	IO2			
67	IO3			

PIN No.	NAME	I/O	FUNCTIONAL DESCRIPTION	REMARKS
68	$\overline{\text{DMOUT}}$	I	This terminal controls IO0~IO3 terminal. At "L" level time, IO0, 1 out feed equalizer signal of 2-state PWM. IO2, 3 out disk equalizer signal of 2-state PWM.	With pull-up resistor.
69	$\overline{\text{CKSE}}$	I	Normally, keep at open.	With pull-up resistor.
70	$\overline{\text{DACT}}$	I	DAC test mode terminal. Normally, keep at open.	With pull-up resistor.
71	TESIN	I	Test input terminal. Normally, keep at "L" level.	Analog input.
72	TESIO1	I	Test input/output terminal. Normally, keep at "L" level.	Analog input.
73	Vss	-	Digital GND terminal.	-
74	PXI	I	Crystal oscillator connecting input terminal for DSP. Normally, keep at "L" level.	-
75	PXO	O	Crystal oscillator connecting output terminal for DSP.	
76	VDD	-	Digital power supply voltage terminal.	-
77	XVss	-	Oscillator GND terminal for system clock.	-
78	XI	I	Crystal oscillator connecting input terminal for system clock.	-
79	XO	O	Crystal oscillator connecting output terminal for system clock.	-
80	XVDD	-	Oscillator power supply voltage terminal for system clock.	-
81	DVSR	-	Analog GND terminal for DA converter. (R-ch)	-
82	RO	O	R channel data forward output terminal.	-
83	DVDD	-	Analog supply voltage terminal for DA converter.	-
84	DVR	-	Reference voltage terminal for DA converter.	-
85	LO	O	L channel data forward output terminal.	-
86	DVSL	-	Analog GND terminal for DA converter. (L-ch)	-
87	TEST1	I	Test mode terminal. Normal, keep at open.	With pull-up resistor.
88	TEST2	I	Test mode terminal. Normal, keep at open.	With pull-up resistor.
89	TEST3	I	Test mode terminal. Normal, keep at open.	With pull-up resistor.
90	BUS0	I/O	Micom interface data input/output terminal.	Schmit input. With pull-up resistor.
91	BUS1	I/O		
92	BUS2	I/O		
93	BUS3	I/O		
94	VDD	-	Digital Ppower supply voltage terminal.	-
95	Vss	-	Digital GND terminal.	-
96	BUCK	I	Micom interface clock input terminal.	Schmit input.
97	$\overline{\text{CCE}}$	I	Command and data sending/receiving chip enable signal input terminal. The bus line becomes active at "L" level.	Schmit input.
98	TEST4	I	Test mode terminal. Normal, keep at open.	With pull-up resistor.
99	$\overline{\text{TSMOD}}$	I	Local test mode selection terminal.	With pull-up resistor.
100	$\overline{\text{RST}}$	I	Reset signal input terminal. Reset at "L" level.	With pull-up resistor.

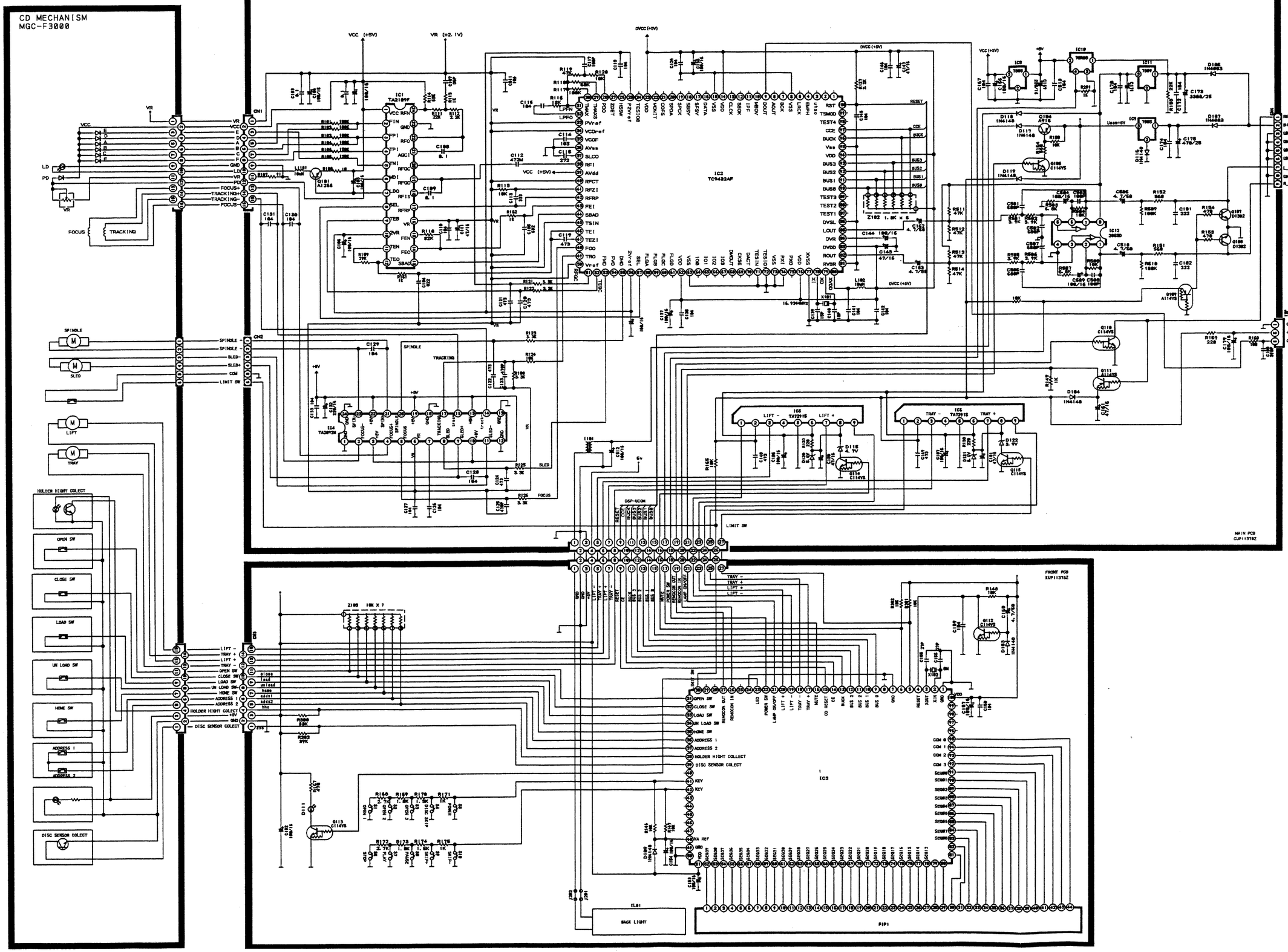
WIRING DIAGRAM



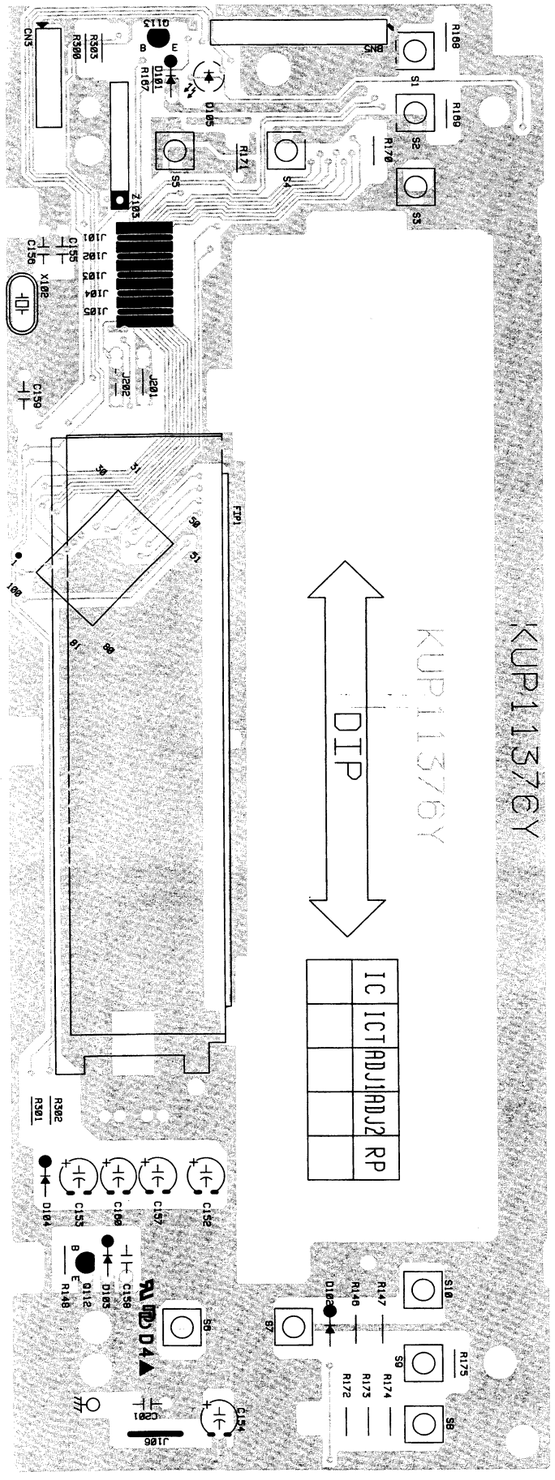
BLOCK DIAGRAM

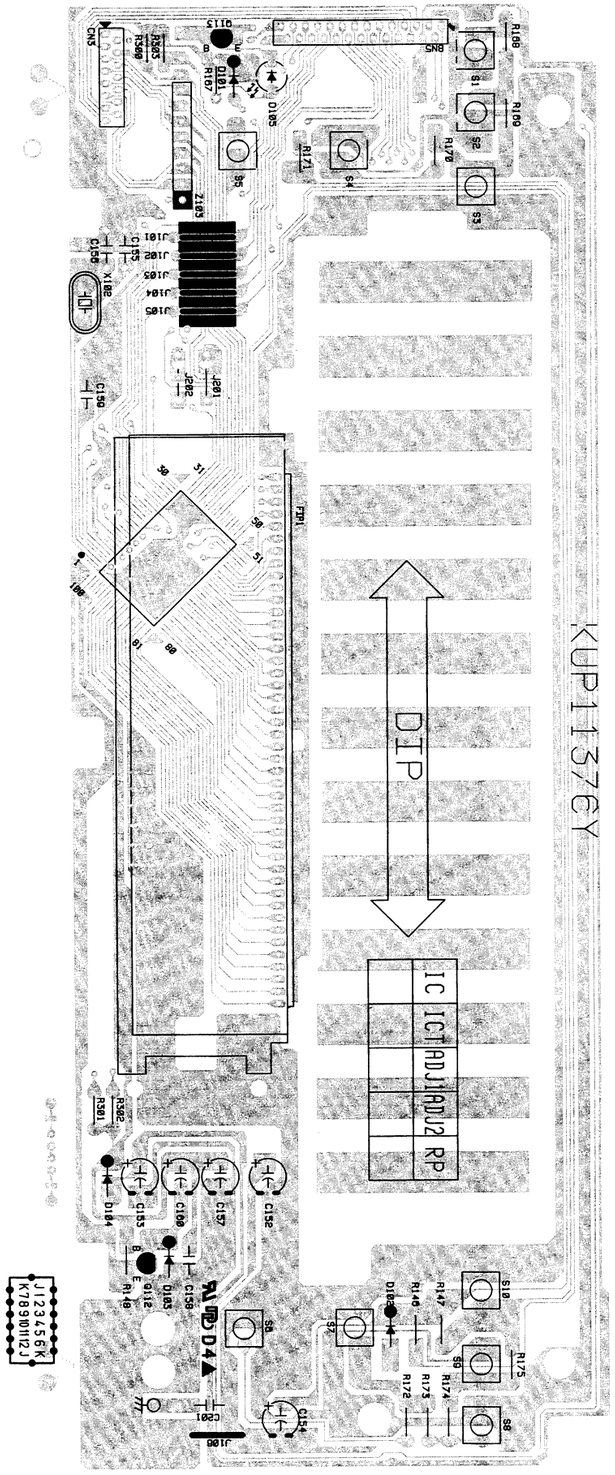


SCHEMATIC DIAGRAM

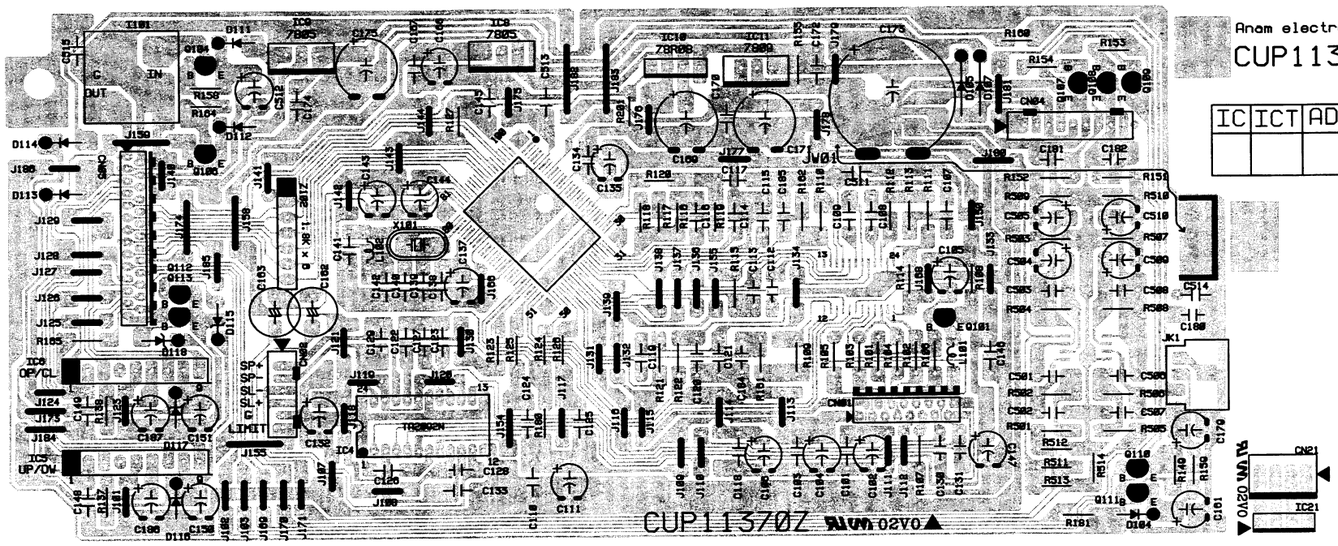


PRINTED CIRCUIT BOARDS

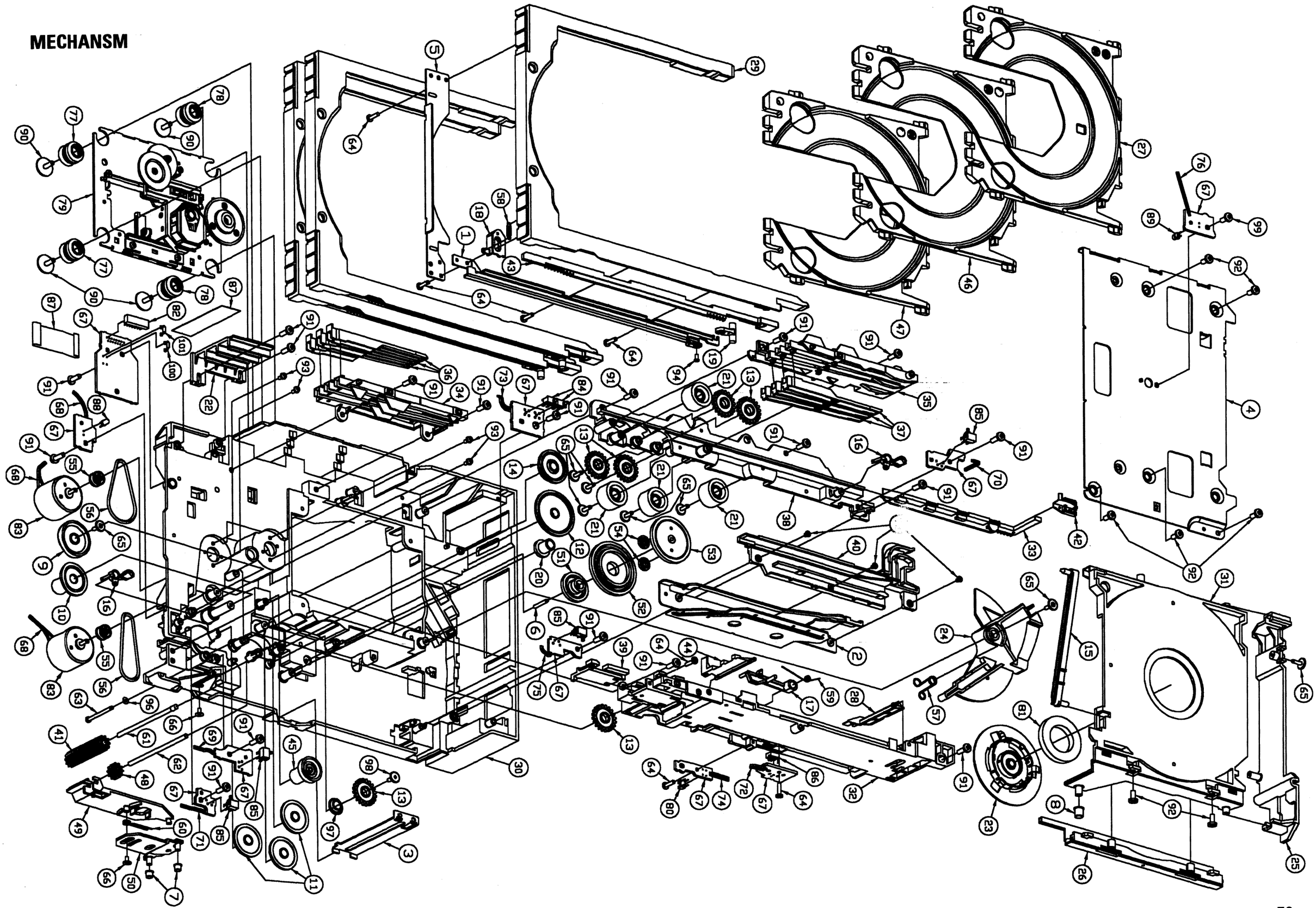




PRINTED CIRCUIT BOARDS



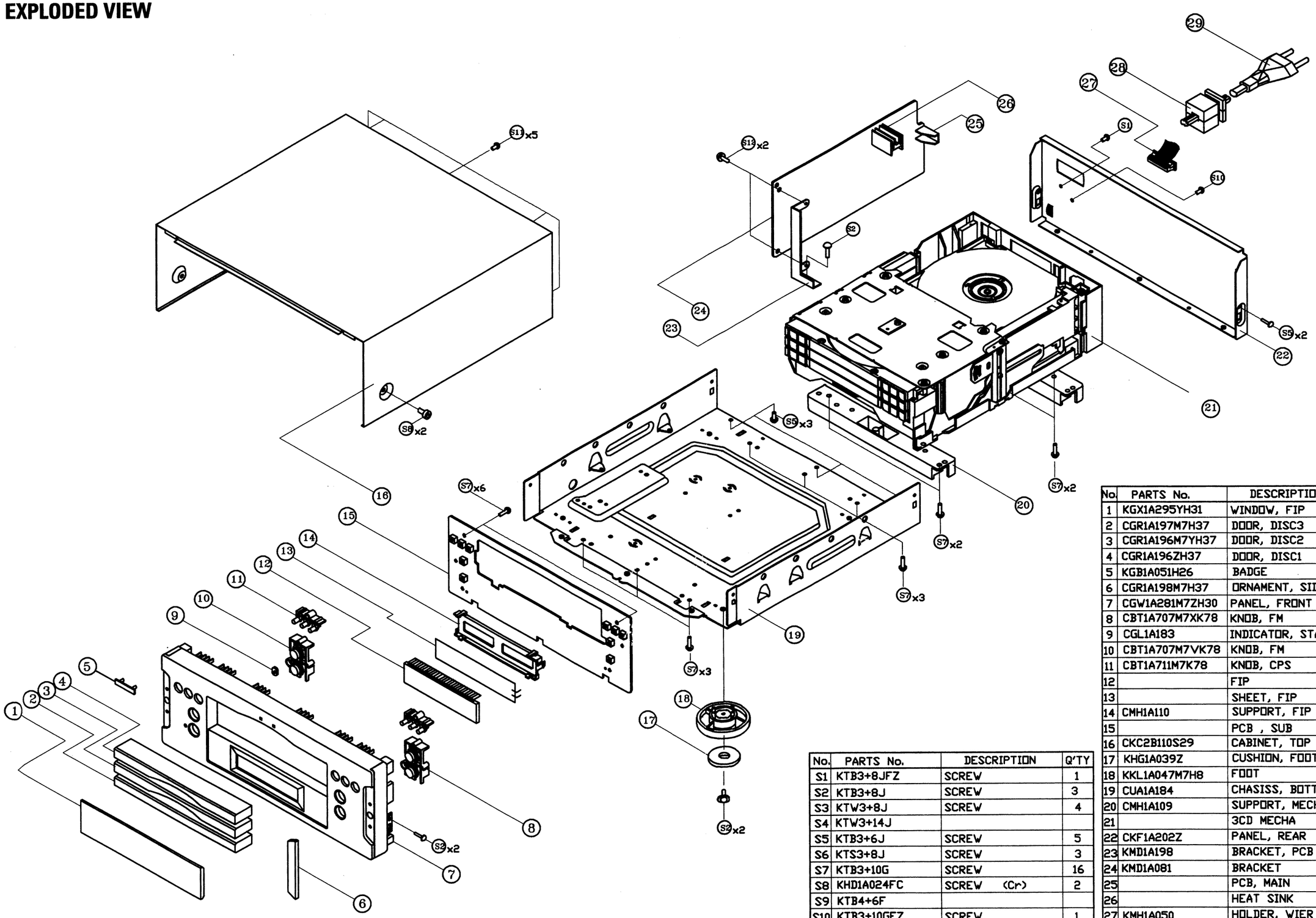
MECHANSM



NO	PARTS NO	DESCRIPTION	QTY	NOTE
1	F3B 1002	REINFORCING HARDWARE(S)	3	
2	F3C 1003	SLIDER(LIFT)	1	
3	F3D 1004	REINFORCING HARDWARE(R)	1	
4	F3B 1005	REINFORCING HARDWARE(TOP)	1	
5	F3C 1006	REINFORCING HARDWARE(F)	3	
6	F3D 2001	SHAFT(GEAR-C)	1	
7	F3D 2002	SHAFT(HOLDER GEAR)	2	
8	F3D 2003	SHAFT(HOLDER TRAY)	1	
9	F3D 3001	PULLEY	1	
10	F3D 3002	GEAR(TRAY MOTOR-A)	1	
11	F3D 3003	GEAR(TRAY MOTOR-B)	3	
12	F3D 3004	GEAR(TRAY MOTOR-C)	1	
13	F3D 3005	GEAR(TRAY-A)	6	
14	F3D 3006	GEAR(LIFT MOTOT-A)	1	
15	F3D 3007	ARM(JOINT)	1	
16	F3D 3008	ARM(LOAD SW)	2	
17	F3D 3009	LACK(GEAR)	1	
18	F3D 3010	ARM(TRAY SUB)	3	
19	F3D 3011	ARM(TRAY LOCK)	3	
20	F3D 3012	GEAR(LIFT IDLER)	1	
21	F3D 3013	GEAR(IDLER)	4	
22	F3D 3014	GUIDE(TRAY OUTER-L)	1	
23	F3C 3016	CLAMPER	1	
24	F3C 3017	CAM(LIFT)	1	
25	F3C 3018	HOLDER(LIFT)	1	
26	F3C 3020	HOLDER(TRAY-R)	1	
27	F3B 3021	TRAY(SUB)	1	
28	F3C 3022	ARM(SWITCH CLOSE)	1	
29	F3A 3023	TRAY(MAIN)	3	
30	F3A 3024	CHASSIS(MAIN)	1	
31	F3B 3025	HOLDER(TRAY TOP)	1	
32	F3A 3026	GUIDE(TRAY OUTER)	1	
33	F3C 3027	SLIDE (TRYA-B)	1	
34	F3B 3028	GUIDE (TRAY-L)	1	
35	F3B 3029	GUIDE (TRAY-R)	1	
36	F3C 3030	ARM(TRAY CATCH-L)	3	
37	F3C 3031	ARM(TRAY CATCH-R)	3	
38	F3B 3032	CHASSIS(GUIDE)	1	
39	F3C 3033	GUIDE(TRAY MID)	1	
40	F3B 3034	GUIDE(CAM)	1	
41	F3D 3035	GEAR(TRAY IDLER)	1	
42	F3C 3037	SLIDER(TRAY-A)	1	
43	F3C 3039	SLIDER(TRAY LOCK)	3	
44	F3C 3040	ARM(SWITCH OPEN)	1	
45	F3D 3042	PULLEY-B	1	
46	F3D 3043	TRAY-SUB2	1	
47	F3D 3044	TRAY-SUB3	1	
48	F3D 3045	GEAR(TRAY-FINAL)	1	
49	F3C 3048	HOLDER(GEAR-B)	1	
50	F3C 3049	HOLDER(GEAR-C)	1	
51	E1D 3021	GEAR(SUN)	1	

NO	PARTS NO	DESCRIPTION	QTY	NOTE
52	D1D 3022	GEAR(INTERNAL)	1	
53	E1D 3023	GEAR(CARRIER)	1	
54	E1D 3024	GEAR(PLANET)	2	
55	E6D 3006	PULLEY MOTOR-A	2	
56	F3D 4001	BELT	2	
57	F3D 6003	TORSION SPRING(CAM LIFT)	1	
58	F3D 6006	EXTENTION SPRING(TRAY LOCK)	3	
59	F3D 6008	TORSION SPRING(LACK GEAR)	1	
60	F3D 6009	TORSION SPRING(HOLDER GEAR)	1	
61	F3D 8001	SHAFT(GEAR-B)	1	
62	F3D 8002	SHAFT(GEAR-A)	1	
63	F3D 8003	SHAFT(PULLEY)	1	
64	E1D 8004	SCREW(TRAY)	15	
65	E1D 8012	SCREW(A2W)	8	
66	E6D 8011	SCREW(SUB-L)	2	
67	F3B 9001	PCB(MAIN)	1	
68	F3D 9003	WIRING HARNESS(A)	3	
69	F3D 9004	WIRING HARNESS(B)	1	
70	F3D 9005	WIRING HARNESS(C)	1	
71	F3D 9006	WIRING HARNESS(D)	1	
72	F3D 9007	WIRING HARNESS(E)	1	
73	F3D 9008	WIRING HARNESS(F)	1	
74	F3D 9009	WIRING HARNESS(G)	1	
75	F3D 9010	WIRING HARNESS(H)	1	
76	F3D 9013	WIRING HARNESS(I)	1	
77	J02 1174	INSULATOR 37 DARK GREEN	2	
78	J02 1175	INSULATOR 25 LIGHT GREEN	2	
79	KCTB1H	TRAVERSE UNIT	1	
80	T95-0159	PHOTO INT GP1S93	1	
81	90566023	MAGNET(2)	1	
82	95002020	CONNECTOR 15FMN-STK	1	
83	91433166	DC MOTOR MDN4BT3MEA	2	
84	94081104	SWITCH MPU10184MLBO	2	
85	94413121	SWITCH MPU11470MLBO	4	
86	94413122	SWITCH MPU11301MLBO	1	
87	96901032	FILAMENT TAPE W1.5CM	2	
88	99518076	PHOTO TRANSISTER RPT-38PB3F	1	
89	99518209	LED SIR-34ST3F	1	
90	N09-3359	TAP TITE SCREW 2.6*6	4	
91	N320023	BIND TAPPING SC 2.6*8	18	
92	N320024	BIND TAPPING SC 2.6*6 BL	7	
93	N530017	SEMS SCREW 2*4	4	
94	N920031	TAPPING SCREW 2*3.5	3	
95	N930025	MACHINE SCREW M2*2.5	3	
96	8341115998	POLY SW 1.57*4*0.5CUT	1	
97	F3D 6010	COMPRESSION SPRING(GEAR)	1	
98	F3D 8007	SCREW(GEAR)	1	
99	N310037	BIND TAPTITE SC 2.6*6	1	
100	RD14BB2C391J	RESISTOR 390	1	
101	RD14BB2C331J	RESISTOR 330	1	

EXPLODED VIEW



No.	PARTS No.	DESCRIPTION	Q'TY
S1	KTB3+8JFZ	SCREW	1
S2	KTB3+8J	SCREW	3
S3	KTW3+8J	SCREW	4
S4	KTW3+14J		
S5	KTB3+6J	SCREW	5
S6	KTS3+8J	SCREW	3
S7	KTB3+10G	SCREW	16
S8	KHD1A024FC	SCREW (Cr)	2
S9	KTB4+6F		
S10	KTB3+10GFZ	SCREW	1
S11	KTB3+10GFC	SCREW (Cr)	5
S12	KTW3+8F	SCREW	2

No.	PARTS No.	DESCRIPTION	Q'TY
1	KGX1A295YH31	WINDOW, FIP	1
2	CGR1A197M7H37	DOOR, DISC3	1
3	CGR1A196M7YH37	DOOR, DISC2	1
4	CGR1A196ZH37	DOOR, DISC1	1
5	KGB1A051H26	BADGE	1
6	CGR1A198M7H37	ORNAMENT, SIDE	2
7	CGW1A281M7ZH30	PANEL, FRONT	1
8	CBT1A707M7XK78	KNOB, FM	1
9	CGL1A183	INDICATOR, STAN	1
10	CBT1A707M7VK78	KNOB, FM	1
11	CBT1A711M7K78	KNOB, CPS	2
12		FIP	1
13		SHEET, FIP	1
14	CMH1A110	SUPPORT, FIP	1
15		PCB , SUB	1
16	CKC2B110S29	CABINET, TOP	1
17	KHG1A039Z	CUSHION, FOOT	4
18	KKL1A047M7H8	FOOT	4
19	CUA1A184	CHASISS, BOTTOM	1
20	CMH1A109	SUPPORT, MECHA	1
21		3CD MECHA	1
22	CKF1A202Z	PANEL, REAR	1
23	KMD1A198	BRACKET, PCB	1
24	KMD1A081	BRACKET	1
25		PCB, MAIN	1
26		HEAT SINK	1
27	KMH1A050	HOLDER, WIER	1
28	KHR1A028	BUSH, AC CODE	1
29		AC CODE	1

■ ELECTRICAL PARTS LIST

REF. No.	PART No.	DESCRIPTION
	FRONT PCB	
C152~ C154	HCEA1CKS101T	CAP , ELECT
C155 , C156	HCBS1H180JCT	CAP , CERAMIC
C157	HCEA1CKS101T	CAP , ELECT
C158 , C159	HCBS1H104ZFT	CAP , CERAMIC 0.1UF 50V Z
C160	HCEA1CKS4R7T	CAP , ELECT 4.7UF 16V
C201	HCBS1H104ZFT	CAP , CERAMIC 0.1UF 50V Z
D101 ~ D104	HVD1SS131MT	DIODE 1SS131MT
D105	KVD342VCTB7T089	L.E.D , RED SLR342VCTB7
I101	HVITMP87PP23F	I.C , O.T.P
Q112 , Q113	HVTDTC114YST	T.R DTC114YS
R146 ~ R148	CRD20TJ103T	RES , CARBON
R167	CRD20TJ471T	RES , CARBON
R168	CRD20TJ272T	RES , CARBON
R169	CRD20TJ182T	RES , CARBON
R170	CRD20TJ152T	RES , CARBON
R171	CRD20TJ102T	RES , CARBON
R172	CRD20TJ272T	RES , CARBON
R173	CRD20TJ182T	RES , CARBON
R174	CRD20TJ152T	RES , CARBON
R175	CRD20TJ102T	RES , CARBON
R300	CRD20TJ333T	RES , CARBON
R301 , R302	CRD20TJ103T	RES , CARBON
R303	CRD20TJ393T	RES , CARBON
S101~S110	CST1A012ZT	SW , TACT SKHV10910G
	CWE8202080AR	WIRE , ASS'Y(1P) F/E GND
CN01	KJP27GA117ZG	WAFER , CARD CABLE
CN02	KJP15GB113ZG	CARD CABLE , WAFER 1M/M ANGLE
EL01	BBL22X115B	EL LAMP EL-0265
F101	KALKXN35930DAP	LCD
I101	HVITMP87PP23F	I.C , O.T.P
X102	KOX08000E160C	CRYSTAL
Z103	KRGSN8X103J	RES , NETWORK
	KWC1B2A15A120A	CARDCABLE
	KWC1B2A27A140B	CARDCABLE
	CJDACC900NCC	3CD MECHA ASS'Y
	CJDMGCF3000	MECHANISM ,3CD CHANGER
	CWB2B906170EG	WIRE ASS'Y
	KWC1B2A16A370A	CARDCABLE
	MAIN PCB	
C101	HCBS1H104ZFT	CAP , CERAMIC 0.1UF 50V Z
C102	HCEA1CH101T	CAP , ELECT 100UF 16V
C103	HCBS1H104ZFT	CAP , CERAMIC 0.1UF 50V Z
C104 ~ C106	HCEA1CH101T	CAP , ELECT 100UF 16V
C107	HCBS1H560JT	CAP , CERAMIC 56PF 50V J
C108 ~ C110	HCBS1H104ZFT	CAP , CERAMIC 0.1UF 50V Z
C111	HCEA1CH101T	CAP , ELECT 100UF 16V
C112	HCQI1H472JZT	CAP , MYLAR 4700PF 50V J
C113	HCQI1H333JZT	CAP , MYLAR 0.033UF 50V J
C114	HCBS1H103ZFT	CAP , CERAMIC 0.01UF 50V Z
C115	HCBS1C272MXT	CAP , CERAMIC
C116	HCBS1H104ZFT	CAP , CERAMIC 0.1UF 50V Z
C117	HCKT1H101KB	CAP , CERAMIC 100PF 50V K
C118	HCBS1H104ZFT	CAP , CERAMIC 0.1UF 50V Z
C119 ~ C122	HCBS1H473ZFT	CAP , CERAMIC 0.047UF 50V Z
C123	HCBS1H471KBT	CAP , CERAMIC
C124	HCBS1H473ZFT	CAP , CERAMIC 0.047UF 50V Z
C125	HCBS1H471KBT	CAP , CERAMIC
C126 , C127	HCBS1H104ZFT	CAP , CERAMIC 0.1UF 50V Z
C128 ~ C131	KCFE1J104JBT	CAP , FILM
C132	HCEA1CH101T	CAP , ELECT 100UF 16V
C133 , C134	HCBS1H104ZFT	CAP , CERAMIC 0.1UF 50V Z
C135 , C137	HCEA1CH101T	CAP , ELECT 100UF 16V
C138	HCBS1H104ZFT	CAP , CERAMIC 0.1UF 50V Z
C139 , C140	HCBS1H120JCT	CAP , CERAMIC 12PF 50V J
C141 , C142	HCBS1H104ZFT	CAP , CERAMIC 0.1UF 50V Z
C143 , C144	HCEA1CH101T	CAP , ELECT 100UF 16V
C145 , C146	HCBS1H104ZFT	CAP , CERAMIC 0.1UF 50V Z
C147	HCEA1CH101T	CAP , ELECT 100UF 16V
C148 , C149	HCBS1H473ZFT	CAP , CERAMIC 0.047UF 50V Z
C150 , C151	HCEA1CH101T	CAP , ELECT 100UF 16V
C161	HCEA1CH101T	CAP , ELECT 100UF 16V
C162 , C163	HCEA1HN2R2T	CAP , ELECT
C166	HCEA1CH101T	CAP , ELECT 100UF 16V
C167	HCBS1H104ZFT	CAP , CERAMIC 0.1UF 50V Z
C169	HCEA1CH221T	CAP , ELECT
C170	HCBS1H104ZFT	CAP , CERAMIC 0.1UF 50V Z
C171	HCEA1CH221T	CAP , ELECT
C172 , C174	HCBS1H104ZFT	CAP , CERAMIC 0.1UF 50V Z
C175	HCEA1CH471T	CAP , ELECT
C179	HCEA1CH101T	CAP , ELECT 100UF 16V
C180	HCKT1H101KB	CAP , CERAMIC 100PF 50V K
C181 , C182	HCQI1H222JZT	CAP , MYLAR 2200PF 50V J
C184	HCQI1H822JZT	CAP , MYLAR 8200PF 50V J
C185	HCBS1C682MXT	CAP , CERAMIC 6800PF 16V M
C186	HCEA1CH101T	CAP , ELECT 100UF 16V
C187	HCEA1CH101T	CAP , ELECT 100UF 16V
C501 , C502	HCKT1H681KB	CAP , CERAMIC
C503	HCKT1H101KB	CAP , CERAMIC 100PF 50V K
C504	HCEA1CH101T	CAP , ELECT 100UF 16V
C505	HCEA1HH4R7T	CAP , ELECT 4.7UF 50V
C506 , C507	HCKT1H681KB	CAP , CERAMIC
C508	HCKT1H101KB	CAP , CERAMIC 100PF 50V K
C509	HCEA1CH101T	CAP , ELECT 100UF 16V
C510	HCEA1HH4R7T	CAP , ELECT 4.7UF 50V
C511	HCBS1H104ZFT	CAP , CERAMIC 0.1UF 50V Z
C512	HCEA1CH101T	CAP , ELECT 100UF 16V
C513 ~ C515	HCBS1H104ZFT	CAP , CERAMIC 0.1UF 50V Z
D104	HVD1SS131MT	DIODE 1SS131MT
D105 , D107	KVD1N4003ST	DIODE 1N4003
D111 ~D114	HVD1SS131MT	DIODE 1SS131MT
D115	KVDUZ4.3BSBT	DIODE , ZENER
D116 , D117	KVDUZ5.6BSCT	DIODE , ZENER
D118	KVDUZ3.9BSBT	DIODE , ZENER UZ-3.9BSB
L101	HLQ02C100KT	COIL , AXIAL
L102	HLQ02C101JT	COIL , AXIAL 100UH , J
Q101	HVTKTA1266YT	T.R TKTA1266YT

■ ELECTRICAL PARTS LIST

REF. No.	PART No.	DESCRIPTION
L102	HLQ02C101JT	COIL , AXIAL 100UH , J
Q101	HVTKTA1266YT	T.R TKTA1266YT
Q104	HVTDTA114EST	T.R DTA114ES
Q106	HVTDTC114YST	T.R DTC114YS
Q107 , Q108	HVTKTD1302T	T.R
Q109	HVTDTA114YST	T.R
Q110	HVTDTC114YST	T.R DTC114YS
Q111	HVTDTA114YST	T.R
Q112 , Q113	HVTDTC114YST	T.R DTC114YS
R101 ~ R104	CRD20TJ104T	RES , CARBON
R105 , R106	CRD20TJ154T	RES , CARBON
R107	CRD20TJ910T	RES , CARBON
R108	CRD20TJ100T	RES , CARBON
R109	CRD20TJ393T	RES , CARBON
R110	CRD20TJ823T	RES , CARBON
R111	CRD20TJ223T	RES , CARBON
R112	CRD20TJ222T	RES , CARBON
R113	CRD20TJ102T	RES , CARBON
R114	CRD20TJ683T	RES , CARBON
R115	CRD20TJ103T	RES , CARBON
R116	CRD20TJ183T	RES , CARBON
R117	CRD20TJ104T	RES , CARBON
R118	CRD20TJ683T	RES , CARBON
R119	CRD20TJ473T	RES , CARBON
R120	CRD20TJ103T	RES , CARBON
R121~R123	CRD20TJ332T	RES , CARBON
R124	CRD20TJ103T	RES , CARBON
R125 , R126	CRD20TJ332T	RES , CARBON
R127	CRD20TJ222T	RES , CARBON
R137 , R138	CRD20TJ331T	RES , CARBON
R149	CRD20TJ102T	RES , CARBON
R151 , R152	CRD20TJ561T	RES , CARBON
R153 , R154	CRD20TJ471T	RES , CARBON
R155	CRD20TJ822T	RES , CARBON
R159 ~ R160	CRD20TJ101T	RES , CARBON
R161 , R162	CRD20TJ102T	RES , CARBON
R164	K3A206	WIRE , COPPER
R165	CRD20TJ103T	RES , CARBON
R180	CRD20TJ332T	RES , CARBON
R181	CRD20TJ103T	RES , CARBON
R201	CRD20TJ102T	RES , CARBON
R501 , R502	CRD20TJ392T	RES , CARBON
R503	CRD20TJ183T	RES , CARBON
R504	CRD20TJ103T	RES , CARBON
R505 , R506	CRD20TJ392T	RES , CARBON
R507	CRD20TJ183T	RES , CARBON
R508	CRD20TJ103T	RES , CARBON
R509 , R510	CRD20TJ104T	RES , CARBON
R511 ~ R514	CRD20TJ473T	RES , CARBON
CN01	KJP16GA117ZG	WAFER , CARD CABLE (STRAIGHT) GF102-16S-TS
CN02	KJP06GA19ZM	WAFER MOLEX53014-0610
CN04	KJP09GA19ZM	WAFER MOLEX53014-0910
CN05	KJP27GA117ZG	WAFER , CARD CABLE
C173	HCEA1EH332E	CAP , ELECT 3300UF 25V

REF. No.	PART No.	DESCRIPTION
IC01	HVITA2109F	I.C , RF AMP DIGITAL SERVO
IC02	HVITC9432AF	I.C , DIGITAL SERVO
IC04	HVITA2092N	I.C , POWER DRIVER
IC05	HVITA7291S	I.C
IC06	HVITA7291S	I.C
IC08	HVIMC7805C	I.C , REGULATOR KA7805-ABTU
IC09	HVIMC7805C	I.C , REGULATOR KA7805-ABTU
IC10	KVIKA78R08	I.C , REGULATOR
IC11	KVIMC7809C	I.C
IC12	HVINJM2068MDTE1	I.C , OP AMP NJM2068MD-TE1
I101	CLT9E001Z	INVERTER , VOLTAGE
JK01	HJS9L001Z	MODULE , OPTICAL TOTX178
JW01	CWE8102100VV	WIRE , BLACK
X101	KOX16934A120C	CRYSTAL
Z102	KRGSN7X182J	RES , NETWORK
	KWDJ0091000VE	WIRE ASS'Y ACC-900
BJP09HB96ZM A,B CONNECTOR(HOUSHING) M 52305-0911		